

AMBIGUITY TOLERANCE AND COPING STRATEGIES AS A PREDICTOR OF
SUCCESSFUL TREATMENT OUTCOMES OF PATIENTS IN OUTPATIENT
ALCOHOL TREATMENT PROGRAMS BASED ON A 12-STEP FORMAT

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San Marcos, Texas
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As a non-traditional student, I turned 49 this year, going back to college was a bitter-sweet experience. I was surrounded by both students and professors that were young enough to be able to call me “mom”, a situation that made the first few class days a bit uncomfortable. But after the initial shock, I was ready and eager for the life of a student. I would like to acknowledge some of the people who made this journey one of exploration and growth.

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and through his teaching; I feel that I am a much better person now than I used to be.
Live long, prosper my friend, and may our paths cross once again.

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ABSTRACT

AMBIGUITY TOLERANCE AND COPING STRATEGIES AS A PREDICTOR OF SUCCESSFUL TREATMENT OUTCOMES OF CLIENTS IN OUTPATIENT ALCOHOL TREATMENT PROGRAMS BASED ON A 12-STEP FORMAT

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This study investigated the relationship between ambiguity tolerance, successful treatment outcomes, and reported coping strategies for clients in an outpatient alcohol treatment program. Participants ($n = 18$) completed the MSTAT-II (ambiguity tolerance) and the Self-Regulating Drinking scale (coping strategies). It was hypothesized that individuals with high ambiguity tolerance would have a higher rate of program completion and report more confrontational coping strategies than those with low ambiguity tolerance. Results found that ambiguity tolerance was not significantly correlated to either completion rates or choice of coping strategy.

CHAPTER I

INTRODUCTION

Introduction and Background

Alcohol has been around for millennia. The fermentation of plant material has been dated to 6,000-4,000 BC (Soleas, Diamandis, & Goldberg, 1997). The earliest physical evidence of alcohol was discovered in a pottery jar in Tepe, Iran (McGovern, Glusker, Exner, Voigt, 1996). Since that time alcohol in its various forms has spread all over the world and into numerous cultures. Within the general population, perhaps the most commonly used and abused substance is alcohol (Frone, 2006). In the United States, alcohol-use disorders (AUDs), including alcohol dependence (AD) and alcohol abuse, are the fourth leading cause of disability (Grant et al., 2004). In a study conducted by Hasin, Stinson, Ogburn, and Grant (2007) it was estimated that in 2001-2002, 8.5% of the adult population of the United States experienced an AUD. Also, it was reported that 30.3% of the population had experienced an AUD at some point in their lifetime. In addition, it has been determined that children of alcohol dependent parents are four times more likely to develop an alcohol problem than children of non-alcohol dependent parents (National Institute on Alcohol Abuse and Alcoholism [NIAAA], 2007). This issue becomes problematic for several reasons. First, alcohol related issues are costly. The NIAAA (1998) reports that in the years from 1985 through 1992, the economic costs of alcohol-related problems and alcoholism rose to \$148 billion. This was an increase of

42% over past years. Approximately two-thirds of these costs were due to lost productivity from either alcohol-related illness or premature death. The majority of the remaining costs involved health and medical expenditures to treat alcohol use disorders, property damage and the administrative costs incurred by alcohol-related motor vehicle accidents, and alcohol-related crime. However, this is not a problem that is going away. In a 2000 report, the estimated cost of lost productivity due to alcohol related problems rose to \$185 billion (Harwood, 2000).

Second, alcohol can create havoc to a person's health and to the health of those around them. For example, some of the negative physiological health effects to the person who uses alcohol over a prolonged period of time are liver disorders (e.g. alcoholic hepatitis, an inflammation of the liver), liver cirrhosis (liver cell damage), cardiovascular problems (e.g. high blood pressure and damage to the heart muscle), birth defects (fetal alcohol spectrum disorders or developmental disabilities), increase risk of some cancers (mouth, pharynx, esophagus, liver, colon, and breast), and sexual dysfunction. Adverse health effects of alcohol use that affect other individuals include accidental injuries such as automobile accidents, falls, drowning, and those inflicted by firearms. Violent injuries such as child abuse, spousal abuse, homicide, and suicide can also occur under the influence of alcohol (CDC, 2010; Mayo Clinic, 2010; NIAAA, 2000).

In a report by U. S. Department of Health and Human Service: Substance Abuse and Mental Health Services Administration (SAMSHA, 2007), in 2006 slightly more than half of Americans aged 12 or older reported being drinkers of alcohol. Of these, 19.5 million needed treatment for an alcohol abuse problem but only 1.6 million received

some sort of treatment from a specialty facility (SAMSHA, 2007). It has been estimated that as many as 700,000 persons are in treatment programs (inpatient/residential and outpatient) on any given day (NIAAA, 2000). As of 2006, 81% of the total number of treatment facilities in the U. S. offered outpatient treatment services (SAMSHA, 2006). Substance abuse treatment programs provide services for both drug and alcohol addiction. Treatment programs have been shown to help individuals who are addicted to drugs and alcohol stop using and avoid relapse (National Institute on Drug Abuse [NIDA], 2009). Through the use of medication, behavior modification, social skills training, and individual, group and family therapy, the patients are offered the opportunity to gain control over their addiction and become drug/alcohol free (SAMSHA, 2011). These facilities utilize a number of therapeutic techniques ranging from substance abuse counseling, cognitive behavioral therapy, relapse prevention, motivational interviewing, and 12-step facilitation (SAMSHA, 2010).

While the percentage of treatment facilities that offer some sort of outpatient service is large (81%; SAMSHA, 2006), there are pros and cons to this type of treatment. On the up side, the patient can return home every day, can maintain his or her job and other routine activities, and maintain a sense of normalcy. Although initial treatment in an outpatient setting has many advantages, it also has some disadvantages when compared with inpatient treatment. During the initial phase of an outpatient substance use program dropout rates can be very high. In one study only half of the patients who began an intensive outpatient program (IOP) completed the entire program (McKay et al., 1997). In addition a significant percentage of patients participating in IOPs continue to drink or use drugs (e.g., McKay et al., 1997). Patients who fail to achieve at least several

consecutive weeks of abstinence during the initial treatment stage have poorer long term outcomes than patients who do achieve abstinence (Higgins et al., 2000; McKay et al., 1999).

According to a study conducted by SAMSHA (2010) almost 80% of the facilities surveyed used 12-step facilitation at some point in their treatment programs. In a treatment facility setting, a 12-step approach is a short, structured method intended to aid the patient in recovery from alcohol abuse/alcoholism; with the average number of sessions ranging from 12-15 and based on the core cognitive, behavioral, and spiritual principles of Alcoholics Anonymous ([AA]; SAMSHA, 2010). This format can be problematic because while it works for many people, it does not work for everyone. According to McKay and Hiller-Sturmhöfel (2011) some of the reasons this technique may lead to people to drop-out from treatment are its religious focus, group sharing of problems or feelings, and expectations of total abstinence.

Another issue that may have an effect on whether or not a person remains in treatment is based on the personality variable of ambiguity tolerance ([AT]; Bauer & Truxillo, 2000; Frenkle-Brunswick, 1949). According to Budner (1962) perceived ambiguity arises from stimuli that are complex, unfamiliar, or insoluble. AT influences how those situations affect the individual. This perceived ambiguity comes into account for people in an alcohol treatment program which is based on AA. AA's message is a simple one: total abstinence from alcohol. In interviews of AA members about the format of their meetings, the messages being delivered and the subsequent effect on new members, one topic seemed to permeate the conversation; not all people who are attempting to stop drinking find AA's messages easy to follow. It appears that AA's

members receive conflicting messages as to how total abstinence is to be accomplished. According to a member of AA, (anonymous personal communication, October 24, 2009) some AA members believe, “there is only one AA program; you either work it or you do not.” For other members, “AA is not a one size fits all program. When someone shares their experience, strength, and hope, you should take what you need and leave the rest here.” This type of conflicting message may create ambiguity which may make it more difficult for someone (low in AT) entering the program to decide to remain in the program. Therefore, one variable that should be taken into consideration for individual’s entering 12-step based treatment programs is their ability to tolerate ambiguity.

Another constant identified during the interviews with AA members occurred when asked what advice was given new members about how to deal with alcohol triggers while not at a meeting or when their sponsor was unavailable. Responses were categorized into two themes: confrontational or avoidant. In other words, does the person confront or avoid alcohol related triggers while attempting to quit. Osborne, Etherton, Sapstead, and Ramos (2010) examined coping strategies to addiction triggers of individuals who were attempting to abstain from smoking. It was found that participants who reported a confrontational strategy to possible trigger scenarios were more successful in maintaining abstinence during follow-up reports than those who reported an avoidant strategy to the same trigger scenarios. Consequently, a second variable that may affect the success of a person entering an alcohol treatment program is based on how that individual responds to alcohol triggers during the time he or she is not at the treatment facility.

Problem Statement

It has been found that for addictive substances such as alcohol, nicotine, or illicit drugs, more than 80% of individuals relapse within one year of treatment (Brandon, Vidrine, & Litvin, 2007). Many treatment programs rely on personalized care when treating their patients (NIDA, 2009), yet with individualized services there are personality traits that might be overlooked and may influence how certain patients respond during their treatment program. How an individual perceives and copes with ambiguous situations (confront/avoid), especially for those who are in an outpatient alcohol treatment programs based on a 12-step format, may mean the difference between completing the program and simply leaving. In addition, when coupled with AT, the style with which a person reacts to and copes with alcohol triggers may have an effect on their ability to remain abstinent while in treatment which may affect the successful completion of a treatment program.

No empirical data appear to address either of the previous problem statements. First, individuals who have an increased level of stress are more susceptible to addiction and relapse (Sinha, 2008). Also, individuals with a low tolerance for ambiguous situations are more vulnerable to stress (Keinan, 1994). It is theorized that when individuals with a low tolerance for ambiguity are placed in ambiguous situations, such as outpatient alcohol abuse treatment programs using a 12-step format, they become more susceptible to stress and are at an increased risk of relapse, resulting in non-completion of the treatment program. Second, exposure to alcohol related cues has been found to increase alcohol cravings (Fox, Bergquist, Hong, & Sinha, 2007; Sinah et al., 2003) and susceptibility to relapse (Becker, 2008). Therefore, it is theorized that an individual's AT

(high/low) is related to their reported coping style (confront/avoid) when exposed to alcohol trigger scenarios.

Purpose and Significance of the Study

The purpose of this study is to explore the correlation between AT, reported coping strategies for alcohol triggers, and successful program completion rates for persons in an outpatient alcohol abuse treatment program. The objective of this study is to increase understanding of the effects AT has on persons in substance abuse treatment programs. Through this heightened awareness, program developers will have another variable that they can address in the formation and implementation of treatment programs.

Overview of Methodology

This study is a correlational study of the relationship between AT on alcohol rehabilitation success rates and AT on reported coping strategies for alcohol trigger scenarios. The participants were clients in an outpatient program in an alcohol treatment facility located in Central Texas from December 2010 through June 2011. All participants were asked to respond to questions on two measures: Multiple Stimulus Types Ambiguity Tolerance Scale-II (McLain, 2009), and the Self-Regulating Drinking Scale (SRSS; Osborne et al., 2010).

Research Question and Hypotheses

In order to test the two main questions proposed by this study, two hypotheses were formulated.

First, for persons seeking alcohol abuse treatment at an outpatient facility utilizing a 12-step format, the ability to deal with any of the conflicting messages that may be

presented during treatment may mean the difference between remaining in the program and simply not returning. Therefore, it is hypothesized that individuals who are high in AT will have a higher rate of program completion while those who are low in AT will have a higher rate of drop out, because those with higher AT would experience less stress in response to ambiguity in the form of conflicting program messages.

Second, for persons seeking alcohol abuse treatment in an outpatient facility, the ability to cope with alcohol triggers is essential for successful abstinence. Based on the research and subsequent discussions with Osborne and Etherton (2010), the two primary authors of a smoking addiction study, it is hypothesized that individuals high in AT will report more confrontational coping responses while those who are low in AT will report more avoidant coping responses. In other words, the individual who is low in AT may not perceive ambiguity in their day-to-day activities where there are no alcohol triggers. In these situations their choices are either “I take a drink” or “I don’t take a drink.” However, for situations where an alcohol trigger is present their choices are no longer limited to “drink” or “don’t drink.” For example, it is quitting time at Bob’s work and the boss has decided to have an impromptu BBQ, complete with beer. In this situation, the possible choices have increased. If Bob decides to stay then he will need to decide how to cope with the presence of alcohol. If he decides to leave, he may have to explain to the boss why he left. This ambiguous situation no longer has a simple solution. If Bob were a low AT individual, he may then resort to more avoidant coping strategies to deal with the stress of the situation (Lazarus & Folkman, 1984) which may cause Bob to simply remain in his office.

Limitations

Due to the population being examined there are several possible limitations to this study. First, only participants that are currently assigned to an outpatient alcohol treatment program based on a 12-step design will be accepted for participation. In conversations with individuals who have been clients in alcohol treatment programs, the first days are difficult for many reasons (e.g., no alcohol permitted, new surroundings, high emotions, etc.). These difficulties may influence participation or influence responses to the surveys. Second, while this study does not inquire into the drinking habits of the participants, specific alcohol related trigger scenarios are introduced. These scenarios may elicit cravings (Fox et al., 2007) which may result in participant attrition. Third, data collection will be conducted by treatment counselors. This may pose problems if questions arise that have not been previously addressed; which may result in omitted or incorrect responses. Additionally, this study's findings will have limited generalizability to other treatment program formats: non-12 step, residential short-term, residential long-term and partial hospitalization/day treatment. Patients in inpatient alcohol treatment programs or other substance abuse treatment programs may have different treatment needs and will not be represented by this sample population.

Terms

This thesis centers on several key terms. Definitions of those terms are as follows:

1. Ambiguity tolerance (AT): An individual's ability to cope with situations that are unclear, uncertain, vague, or have more than one meaning.

2. Alcohol trigger: Any stimulus that evokes thoughts about alcohol consumption.
3. Confrontational coping strategy: Any coping strategy where an alcohol trigger is faced without any attempt to distract or avoid the trigger.
4. Avoidant coping strategy: Any coping strategy where efforts are made to avoid encountering or remaining in the presence of an alcohol trigger.

Thesis Organization

This chapter introduces the purpose and significance of the study for this thesis, a general overview of the methodology, the research questions and hypotheses being tested, the study's limitations, and definitions of key terms that are the basis of this study. Chapter II further elaborates on the literature and topics related to AT, stress and alcohol relapse, and reported coping strategies to alcohol trigger scenarios. The methodology for the study is presented in Chapter III, which includes the research questions, hypotheses, selection of participants, instruments, data collection tasks, data analysis procedures, and information on validity and reliability. In Chapter IV, the results obtained from this study are presented. Chapter V provides a general discussion of the results, implications for practice and further research, and overall conclusions. Chapter VI contains the literature for the second study, highlighting information specific to a college population. Chapter VII covers the methodology for the second study conducted for this thesis to include: hypotheses, instruments, participants, data collection procedures, analyses uses, and summary. The following chapter, Chapter VIII discusses the results for both alcohol and smoking participants. The final chapter includes a general discussion of chapters dedicated to the second study.

CHAPTER II

LITERATURE

Introduction

Many psychological factors have been associated with substance use, treatment, and relapse. For example, it has been found that impulsivity is a risk factor for substance use (Acton, 2003). Kushner, Abrams, and Borchardt (2000) found that anxiety disorders may contribute to the maintenance and relapse of alcohol use. Furthermore, in a controlled study, comparisons between individuals of an in-patient detoxification center (treatment group) were found to have higher scores on novelty seeking than the non-alcohol dependent control group (Basiaux et al., 2001).

Specific personality factors have been associated with completion and relapse rates for individuals in substance use treatment programs. Fisher, Elias, and Ritz (1998) found that in a sample of patients who completed a treatment program emphasizing the 12-step model of AA, personality traits (low conscientiousness and high neuroticism) were related to relapse after treatment. Kravitz, Fawcett, McGuire, Kravitz, and Whitney (1999) conducted a study using the Tridimensional Personality Questionnaire (TPQ). It was found that patients who dropped out of treatment had higher scores for novelty-seeking than patients who completed treatment. Bottlender and Soyka (2005) examined the effect of personality differences, utilizing the NEO Five-Factor Inventory (NEO-FFI), on relapse outcomes at 6 and 12 months, of alcohol-dependent patients after

completion of an outpatient treatment program. Results indicated at 6 months, patients who were abstinent, when compared to those who relapsed, scored significantly higher on the extraversion and conscientiousness scales; while at 12 months, abstinent patients scored significantly lower on the neuroticism scale and higher on the conscientiousness scale.

While Stefansson and Hesse (2008) argue that substance abuse treatment is more effective if it addresses personality issues, it is not a novel concept. A growing body of research suggests that a focus on both substance use and personality disorders is more effective than treatment focusing in the substance use disorder alone. For example, Sladen and Mozdierz (1985) utilized the Minnesota Multiphasic Personality Inventory (MMPI) to develop the Against Medical Advice (AMA) scale, which was shown to successfully differentiate between patients who would complete the program (completers) from those who would terminate treatment (dropouts). Also, Nielsen, Røjskjær, and Hesse (2007) found that the Personality-Guided Treatment for Alcohol Dependence (PETAD), which focused on personality disorders as well as alcohol problems, positively affected retention in an alcohol treatment program. In addition, Palmer, Murphy, Piselli, and Ball (2009) found that individual characteristics (e.g., mental health issues, lack of support), rather than program factors (e.g., staff expectations, concerns about privacy), account for the majority of self-reported reasons for termination of treatment. However, there is no evidence that the personality variable of ambiguity tolerance (AT) has been studied in relation to treatment outcomes.

This study proposes that individuals who are high in AT and are seeking outpatient treatment for alcohol abuse in facilities utilizing a 12-step format will have a

higher rate of program completion than those individuals who have low AT. Also, it is proposed that those individuals who are high in AT will report more confrontational coping responses to alcohol trigger scenarios while those who are low in AT will report more avoidant coping responses to the same trigger scenarios.

This chapter will review AT and its relationship to alcohol use and relapse. This will be accomplished in several ways. First, the concept of AT will be discussed. Second, the relationship between AT and stress will be addressed. Third, the effects stress can pose to an individual seeking treatment for substance use; e.g., consumption of alcohol and chances for relapse. Lastly, the use of conflict or avoidant coping strategies when confronted by an alcohol trigger will be described.

Ambiguity Tolerance

As we go through our daily lives, there are myriad situations that require our attention, both physically and cognitively. Some are relatively simple; they are concrete, black-white, right-wrong, or yes-no. For example, it is against the law (wrong) to drive through a red light. Conversely, there are situations that are more confusing, have no clear boundaries and are more difficult to navigate, such as driving up to an unmarked crossroads where there is more than one way to turn. In other words, these latter situations are unclear, uncertain, vague, or have more than one meaning; they are ambiguous. Budner (1962) classified ambiguous situations into three categories; 1.) a novel situation in which there are no recognizable cues, 2.) a multifarious situation in which there are numerous cues, and 3.) an incongruous situation in which cues are dichotomous. An ambiguous situation is one that is new, complex, or insoluble. Norton (1975) furthered examined the concept of ambiguity and after an extensive study of the

literature he identified characteristics of an ambiguous situation as falling into eight categories: 1.) multiple meanings, 2.) vague, incomplete, or fragmented, 3.) as a probability, 4.) unstructured or unorganized, 5.) little or no information, 6.) uncertain, 7.) inconsistent or contradictory, and 8.) unclear.

However, these uncertain or novel situations themselves are not all that interesting; rather the interest lies in how people cope with those situations. Frenkle-Brunswick (1949), who introduced the concept of AT as a personality attribute, studied how people react to those situations. She found that individuals who were intolerant of ambiguity had a “tendency to resort to black-and-white solutions” (p. 115). Since that time a number of studies have delved into the concept of AT. Budner (1962) stated that an individual who was intolerant of ambiguity is unable to structure or categorize an ambiguous situation due to the lack of adequate or appropriate cues. Norton (1975) furthered examined the concept of ambiguity in an attempt to explain how an individual perceives, reacts, and interprets ambiguous situations or stimuli. Norton (1975) defined intolerance of ambiguity as a “tendency to perceive or interpret information marked by vague, incomplete, fragmented, multiple, probable, unstructured, uncertain, inconsistent, contrary, contradictory, or unclear meanings as actual or potential sources of psychological discomfort or threat” (p. 608). Lazarus and Folkman (1984) continued this line of thinking and found “In humans ambiguity can intensify threat by limiting the individual’s sense of control and/or increase a sense of helplessness over the [perceived] danger” (p. 106). Furthermore, Furnham and Ribchester (1995) state “The person with low tolerance of ambiguity experiences stress, reacts prematurely, and avoids ambiguous stimuli. At the other extreme of the scale, however, a person with high tolerance for

ambiguity perceives ambiguous situations/stimuli as desirable, challenging, and interesting and neither denies nor distorts their complexity or incongruity” (¶3).

Ambiguity tolerance, which has been studied as an individual difference variable, appears to be a two-sided coin (Anderson & Schwartz, 1992; Nutt, 1993). On one side lies the individual who is tolerant of ambiguous situations (high AT). To this person these “grey” situations can be perceived as desirable or challenging and has been associated with positive attributes such as creativity (Furnham & Ribchester, 1995; Kirton, 2003; Zenasni, Besançon, & Lubart, 2008). However, for the individual who is intolerant of ambiguity (low AT) those same situations may be deemed threatening and can be wrought with feelings of discomfort or lack of control (Bauer & Truxillo, 2000; Budner, 1962; Campbell & Tesser, 1983; Kang & Singh, 2001; Keinan, 1994) and can also be perceived as a source of stress (Brief & Aldag, 1976; Frone, 1990; Howard, Cunningham & Rechnitzer, 1986; Keenan & McBain, 1979; Miles, 1975; Rizzo, House, & Lirtzman, 1970).

Stress, Alcohol Use and Relapse

At some point almost everyone will experience some sort of stress. The perception of what is or is not a stressful situation is a varied as the individuals doing the perceiving. What is perceived as a stressful situation for John may be perceived as a challenge for Bill. A number of students were asked how they felt before taking an exam (personal interviews, 2010). Many of the students found this situation to be extremely stressful; however, there were some students who found the challenge of an exam to be an exhilarating experience. In fact, if you were to ask 10 people what they thought stress was, the chances of getting 10 different definitions would probably be pretty good. But

what exactly is it? Most of us don't usually put forth any effort in defining what stress is, we simply know when we are stressed. Lazarus and Folkman (1984) defined stress as an individual's cognitive and physiological adaptation to situations that are threatening, challenging, or harmful. Stress is often described using words such as "overwhelmed", "worried", or "run-down" (Baum, 1990). Holmes and Rahe (1967) determined that any event that disrupts our routine, be it positive (marriage or birth of a child) or negative (death of family member or loss of a job) can be perceived as stressful. However, more current research has shown that negative life events are more deleterious to the individual than the positive ones (Lazarus & Folkman, 1999).

Stress has been associated with a number of physical ailments and negative health consequences (Cullen, Link, Wolfe, & Frank, 1985; Matteson & Ivancevich, 1987), such as an increase in heart related illness (Karasek, Baker, Marxer, Ahlbom, & Theorell, 1981; Krantz & McCeney, 2002), increased blood pressure (Howard et al., 1986; Robbins, Spence, & Clark, 1991; Schnall, Schwartz, Landsbergis, Warren, & Pickering, 1998), and tension headaches and sleep disturbances (Gray, 1987). Additionally, stress has been connected to alcohol consumption (Fox, Bergquist, Peihua, & Sinha, 2010; Frone, 1999; Russell, Skinner, Frone, & Mundar, 1992), an increased risk for alcoholism (Barr et al., 2009; Sher & Levenson, 1982) and a vulnerability to substance use, addiction, and relapse (Goeders, 2003; Khantzian, 1985; Sinha, 2001).

To get a better understanding of stress and its effects on alcohol use Conger (1956) proposed the tension-reduction hypothesis; alcohol consumption can minimize the negative affective states that are associated with stress. This reduction in negative emotions increases the probability that alcohol will be consumed the next time a stressful

situation is experienced. In other words, an individual drinks alcohol to reduce the effects of stress; they feel better because of it and are more likely to use alcohol again during stressful situations. Others have also supported the stress-related drinking perspective. Marlatt (1979) proposed a cognitive-behavioral model of stress-related drinking. Marlatt posited that stress-related drinking was a function of five variables: 1.) how intense the stress is perceived to be, 2.) the degree of perceived personal control, 3.) the availability of adequate or appropriate coping responses, 4.) how available the substance is, and 5.) the individual's perceived expectancies of coping as a result of drinking (Marlatt, 1979). This model took into account personal and environmental characteristics when attempting to explain the relationship between stress and alcohol consumption. Furthermore, Pohorecky (1991) conducted a review of the research used to study the connections between stress and alcohol use. In many of these studies it was found that individuals who drink in response to or as a coping mechanism for stressful situations do so in such situations as loss of a job, economic hardships, or marital problems. It was also found that the more severe the stress was perceived by the individual, the greater the amount of alcohol consumption.

Not only does stress appear to increase the probability of alcohol consumption, it appears to be an obstacle for a person who is attempting to abstain from any addictive substance and can lead to an increased rate of relapse (Fox et al., 2010; Frone, 1999; Goeders, 2003; Khantzian, 1985; Russell et al., 1992; Sinha, 2001). Yet, for the individual who is endeavoring to remain sober stressful situations come in various shapes and sizes. Withdrawal from an addictive substance can be a potential stressor increasing an individual's susceptibility to relapse (Sinha, 2008). In addition, the environment the

individual has to navigate through may be full of stress inducing cues or “triggers” and how an individual copes with those triggers may make it more difficult to refrain from drinking.

Confront or Avoidant Coping Strategies

Coping Strategies

Attempting to quit drinking and remain abstinent can be quite stressful and how the individual copes with those stressful situations may mean the difference between sobriety and relapse. Coping denotes an individual’s behavioral and cognitive efforts to manage both internal and external demands of a situation that exceeds the resources of the individual (Folkman & Lazarus, 1986; Lazarus & Folkman, 1984). Lazarus and Folkman (1984) identified two primary strategies involved with coping in stressful or anxiety evoking situations, problem-focused coping and emotion-focused coping. Problem-focused coping entails deliberate efforts to change or alter the situation that is the cause of distress by actively engaging the situation (decision-making, planning, or conflict resolution). Emotion-focused coping attempts to accomplish a reduction in stress by changing the meaning of the situation (reappraising, positive thinking, or losing hope), or changing the way the individual attends to the situation (distancing, evading, ignoring or denying the problem, avoiding the cause of stress, participation in alternate activities, or substance use (Folkman, Lazarus, Gruen, & DeLongis, 1986; Lazarus, 1993; Lazarus & Folkman, 1984; Roth & Cohen, 1986). In other words, coping skills can be categorized as either approach (confront) or avoidant (Moos, 1997).

Coping strategies may also be affected by the person’s perceived control. It has been found that active (problem-focused) coping is preferred in situations of high-

perceived control while emotion-focused coping strategies are utilized in situations of low-perceived control. (Folkman & Lazarus, 1980; Ptacek, Smith & Dodge, 1994; Scheier, Weintraub, & Carver, 1986). As previously mentioned, ambiguous situations may limit an individual's sense of control (Lazarus & Folkman, 1984) and a person who with low AT may avoid ambiguous stimuli (Furnham & Ribchester, 1995). Therefore, the low AT individual who is attempting to quit an addictive substance may defer to emotion-focused coping strategies when their perceived control is low.

Alcohol Triggers

Individuals who are attempting to give up any addictive substance such as drugs, alcohol, or tobacco may be unable to resist the urge to relapse when they are placed in a situation where they are reminded of their past usage. Dr. Mary Jeanne Kreek (as cited in Stocker, 1999), a researcher for the national Institute on Drug Abuse, noted:

“For 6 months or so, they can walk past the street corner where they used to buy drugs and not succumb to their urges. But then all of a sudden they relapse.

When we ask them why they relapse, almost always they tell us something like, ‘Well, things weren’t going well at my job,’ or ‘My wife left me.’ Sometimes the problem is as small as ‘My public assistance check was delayed, or ‘The traffic was too heavy’” (Stocker, 1999).

To the non-addicted person, these seemingly mundane situations do not elicit a desire to have a drink or to smoke a cigarette. However, for the person who is attempting to quit an addictive substance, any situation where they find themselves under stress may test their will power.

Individuals who have been participating in an Alcoholics Anonymous (AA) 12-step program have a unique insight into what is required to stay sober after that first meeting. Members of a local AA group were interviewed (personal communication, 2009) and asked about advice they would give to new members on ways to remain abstinent. A common theme surfaced; how best to help them deal with the deluge of events or “triggers” that might cause them to relapse (e.g., feeling stressed, driving by a bar, or simply thinking about having a drink). Most of the responses were anecdotal and based on personal experiences, however the coping strategies mentioned fell into two categories: confrontational or avoidant. A confrontational strategy was one where the trigger is faced directly. For example, a person wanting to quit drinking decides to attend a sporting event where beer will be available; choosing to abstain from consuming any alcohol. On the other hand, an avoidant strategy was the opposite; remain home instead of going to a party where alcohol is being served.

Helping an addicted individual become aware of potential triggers is not a new concept in recovery programs. Twelve-step recovery groups use two acronyms to help their members with the recovery process; HALT, hungry, angry, lonely, or tired, which warns members about affective triggers, and PPT which stands for people, places, and things, warning about situational triggers (Schenker, 2009). Breese and colleagues (2005) released the following statement:

This symposium (2004 Research Society on Alcoholism Meeting) provides convincing evidence that excessive use of alcohol leads to persistent adaptive change that interacts with stress. In this respect, environmental cues during abstinence in the alcoholic can be stressful, which may increase symptoms of

negative affect and anxiety- circumstances that result in craving, loss of control to limit alcohol consumed with relapse, and the likelihood of continued alcohol abuse.” (p. 193)

The ability to remain abstinent may hinge on how the addicted individual copes with both affective and environmental triggers. Becker (2008) found events such as stress, exposure to alcohol, and alcohol related cues increase an individual’s susceptibility to relapse. One technique that has been utilized to study the effects of alcohol-related cues on abstinent individuals is the reading of scripts containing alcohol related stimuli such as being at a bar, watching others drink, or purchasing alcohol (Fox et al., 2007; Sinah et al., 2003). These studies have found that individuals who are recently abstinent are more sensitive to alcohol cravings when exposed to alcohol related cues.

Current Study

Osborne et al. (2010) used written trigger scenarios to better understand the type of coping strategies employed by individuals attempting to quit smoking. It was found that participants who reported more confrontational choices in response to trigger scenarios (such as, “a friend who smokes invites you for lunch; you say you will go but promise yourself you will not smoke” [confront]) reported smoking significantly fewer cigarettes per day at the end of the 4-week study than those who chose more avoidance strategies (“you make up an excuse not to go” [avoid]). A search of the literature failed to produce any research on the relationship between AT and trigger or cue reactivity. However, based on the literature involving coping styles, AT, and stress and relapse as well as several discussions with Drs. Osborne and Etherton it was theorized that

individuals who reported low AT would utilize more avoidant coping strategies than their high AT counterparts.

Conclusion

This chapter reviewed relevant literature about personality variables in relation to substance and relapse and how a low tolerance for ambiguity is related to a high level of stress, which can increase susceptibility to drug and alcohol use. AT was defined as a stable personality trait (Frenkle-Brunswick, 1949) associated with stress (Frone, 1990). A number of health related issues were identified as resulting from stress and stress was linked to the development of drug addiction and alcoholism (Barr et al., 2009; Goeders, 2003). Lastly, individual coping strategies (confront/avoid) were examined in relation to alcohol triggers for persons attempting to remain abstinent from drinking. To date no studies have addressed the direct relationship between AT, issues such as susceptibility to alcohol abuse and relapse of alcoholics, or coping strategies for alcohol related triggers.

CHAPTER III

METHOD

Introduction

This chapter describes the research methodology, methods, and materials for this study, which consists of the following sections: research perspective and design, research questions and corresponding hypotheses, participants, research variables and instruments, data collection procedures and environment, statistical analyses, validity, and summary.

Research Questions and Corresponding Hypotheses

Brandon and colleagues (2007) report that for persons who have received treatment for addictive substances such as alcohol, nicotine, or illicit drugs, approximately 80% will relapse within 12 months. While personalized care appears to be the foundation for many treatment programs (NIDA, 2009) not all personality constructs appear to have been taken into account. A client's ability to tolerate ambiguous situations, especially for those in 12-step based treatment programs, may prove to be pivotal in whether or not they successfully complete their program. Additionally, the coping strategy used by each person (confront/avoid) when confronted by an alcohol trigger may affect their ability to remain abstinent while in treatment and affect their rate of program completion.

In order to test the two main questions proposed by this study, two hypotheses were formulated.

1.) Individuals who are high in AT will have a higher rate of program completion while those who are low in AT will have a higher rate of non-completion.

2.) Individuals high in AT will report more confrontational coping responses when exposed to alcohol trigger scenarios; while those who are low in AT will report more avoidant coping responses.

Participants

The study sample consisted of clients in an outpatient alcohol treatment program in a treatment facility located in Central Texas from December 2010 through June 2011. Data were gathered from 18 participants. The sample consisted of 11 men and 7 women with ages ranging from 23 to 65 years ($M = 43.11$; $SD = 13.2$). Of these participants 100.00% were White. IRB approval from Texas State University-San Marcos, Texas was obtained for this study (2010B6747). Participation was completely voluntary. Informed consent was obtained prior to participation and each individual had the option not to participate in the study at no risk to their standing in the treatment program.

Research Instruments

Participants were asked to respond to a general Demographic Questionnaire questions on two measures: Multiple Stimulus Types Ambiguity Tolerance Scale-II, and the Self-Regulating Drinking Scale.

Demographic Questionnaire

The *Demographic Questionnaire* (DQ) was designed to obtain basic demographic information; gender, age, race, education level, marital status, and income.

Multiple Stimulus Types Ambiguity Tolerance Scale-II

The *Multiple Stimulus Types Ambiguity Tolerance Scale-II* (MSTAT-II; McLain, 2009) is a 13-item measure designed to measure an individual's cognitive tolerance range (aversion to attraction) for situations that are unfamiliar, insoluble, or complex (see Appendix A). The MSTAT-II measures the participants' degree of ambiguity tolerance based on five stimulus types: 1) ambiguous stimuli in general, "I am tolerant of ambiguous situations," 2) complex stimuli, "I avoid situations that are too complicated for me to easily understand," 3) uncertain stimuli, "I find it hard to make a choice when the outcome is uncertain," 4) New/unfamiliar/novel stimuli, "I prefer familiar situations to new ones, and 5) insoluble/illogical/internally inconsistent stimuli, "Problems that cannot be considered from just one point of view are a little threatening." Items are structured as five-point Likert-type responses ranging from "1: strongly disagree" to "5: strongly agree". Classification of participants into high AT or low AT was determined by a median split of total scores; scores ranging between 13-36 indicates a lower ambiguity tolerance while scores between 37-65 indicate a higher ambiguity tolerance. McLain (2009) reported an internal consistency reliability of .83 (Cronbach's alpha) which did not increase if any of the 13 items were eliminated.

Self-Regulating Drinking Scale

The *Self-Regulating Drinking Scale* (SRDS) is a revised version of the *Self-Regulating Smoking Scale* (SRSS; Osborne et al., 2010). The SRSS was an experimenter-generated survey designed to assess the success of an individual's efforts to abstain from smoking. The SRSS is a ten-item questionnaire that evaluates a person's responses to addiction triggers based on confrontation or avoidance strategies (see

Appendix B). The SRDS was created to parallel the predictive ability of the SRSS for participants who have attempted to quit drinking. The SRDS is also a ten-item questionnaire that assesses a person's responses to addiction triggers based on confrontation or avoidance strategies. Each item was scored with a value of 1 (avoid strategy) or 2 (confront strategy) with a score range of 10-20. Item example: "A friend invites you to a party, and in hearing the names of some people who will also be attending, you realize that some of them are drinkers. Would you be more likely to: a) Turn down the invitation to the party in order to avoid being around drinking (avoid, 1) or b) Decide to go the party but prepare yourself mentally to keep from having a drink (confront, 2)". Classification of participants into avoidant or confrontational coping strategy was determined by a median split of total scores; total SRDS score of 10-14 indicates more avoidant coping strategies, while a total score of 15-20 indicates more confrontational coping strategies. The SRSS was generated for another study and has not yet been subjected to either reliability or validity analyses. Therefore, the SRDS does not have either reliability or validity to report.

Data Collection Procedures and Environment

Ten treatment facilities located in the Central Texas area were contacted via email. Contact persons included but were not limited to: CEO's, program, executive, clinical directors, and human resource directors. Of the facilities contacted, two facilities (F1 and F2) agreed to participate and only under the following condition. To ensure their clients anonymity and confidentiality only facility counselors would interact with clientele. To facilitate this request an initial meeting was scheduled with each treatment facility counselor. Topics of discussion included an overview of the study, a thorough

explanation of the consent form (must be voluntary; no repercussions for non-participation; non-signed copy given to participant), a complete explanation of survey instruments, and procedures for data collection. It was emphasized that once a survey form was completed, there would be no need for further involvement by the participant. Data concerning participant completion (Y) or non-completion (N) would be conveyed through the use of a numerical identification number written on the top of each survey packet. This information was either sent via email or included in the packets that were picked up from the facility. Each counselor was given 25 packets as well as a completion. Each packet contained two consent forms (one to be signed and returned, one to remain with the participant) and the survey instruments. Time was allotted for the counselor to read each document and have any questions or concerns addressed. Once all questions were answered, follow up protocols were discussed (i.e., contact information, preferred method of contact, exchange of documents). All completed consent forms and surveys would remain with the facility counselor until an agreed upon date and time was scheduled for pick up. Weekly email contact was made by the researcher to the counselor of each facility. These correspondences included queries into progress being made, a request for questions or concerns, if and when any completed surveys needed to be picked up, and if additional documents were required. The exact method of data collection for each facility is unknown to the researcher as each facility counselor was to determine the proper course of action and accepted responsibility for this aspect of the study.

Of note, treatment facility F2 did not complete the study. Approximately 4 weeks into the study, the counselor notified the researcher stating that the facility could no

longer facilitate the distribution of the surveys due to a shortage of personnel. No data were collected from F2.

Statistical Analysis

SPSS, version 18.0, was used to analyze the data for this study by generating both descriptive and correlational statistics. For the first research question, a bivariate correlation was used to determine the relationship between AT and successful completion of an outpatient alcohol treatment program. In addition, the second research question also used a bivariate correlation to analyze the relationship between AT and reported coping strategy for alcohol trigger scenarios. Classification of participants into high or low AT was determined by a median split of total score.

Reliability and Validity

Due to the non-experimental design of this study no causal relationships can be determined. Participants were not randomly selected; only clients of outpatient alcohol treatment programs were recruited. External validity can be affected due to the small sample size, clients of only one facility participated, and only clients in an outpatient program were recruited; thus reducing generalizability to other treatment formats. The high internal consistency of the MSTAT-II (McLain, 2009) provided a reliable measure of AT. The reliability and validity of the SRDS has yet to be determined.

Summary

Chapter III described the methods used to examine the relationship between AT, confront/avoid coping strategies, and successful completion of a 12-step based outpatient alcohol treatment program.

This chapter focused on the methodology, methods, and materials for this study. Through the use of a bivariate correlation, the relationship between ambiguity tolerance and success in an outpatient treatment program was examined. In addition, a bivariate correlation was used to evaluate the relationship between ambiguity tolerance and conflict/avoidant coping strategies to alcohol trigger scenarios. The MSTAT-II was used to evaluate the participant's level of ambiguity tolerance. The SRDS assessed the participant's choice of conflict or avoidant coping strategies to alcohol trigger scenarios.

CHAPTER IV

RESULTS

Introduction

The previous chapter explained the design and methodology utilized in this study for selecting participants, identifying variables, describing measurement instruments, processes of data collection, statistical analyses used to evaluate data, and validity and reliability of measures. Chapter IV discusses the methodological summary of this study which is presented the following section.

Methodological Summary

In the current study, participants enrolled in outpatient alcohol treatment programs were asked to complete two survey instruments: the MSTAT-II to assess their level of ambiguity tolerance and the SRDS to determine their preferred coping strategy (conflict or avoidant) for alcohol trigger scenarios. Data were analyzed based on level of ambiguity tolerance (high/low) in relation to completion of treatment program. Additional data were gathered to test the relationship between level of ambiguity tolerance (high/low) and choice of coping strategy (conflict/avoid) to alcohol trigger scenarios.

Results

Participants

Eighteen clients in an outpatient alcohol treatment facility participated in this study. A total of 61.1% ($n = 11$) were male. The age of the participants ranged from 23-65 years ($M = 43.11$, $SD = 13.20$). One hundred percent of the participants were Caucasian. Education level was reported by 17 participants; 16.7% ($n = 3$) finished high school or received a GED, 22.2% ($n = 4$) had some college, 27.8% ($n = 5$) had a Bachelor's degree, 11.1% ($n = 2$) had a Master's degree, and 16.7% ($n = 3$) had a Professional degree. Marital status was reported by all participants; single (22.2%), married (50.0%), separated (5.6%), divorced (16.7%), and widowed (5.6%). Complete demographic information can be found in Table 1.

Research Question 1

Individuals who are high in AT will have a higher rate of program completion while those who are low in AT will have a higher rate of non-completion. A bivariate analysis was run to determine the correlation between AT category (high or low) and reported program completion or non-completion. AT was not significantly correlated with program completion (-.04) which indicates there was no relationship between an individual's level of ambiguity tolerance and their successful completion of an outpatient treatment program (see Table 2).

Table 1

Participant Demographics

Variable	N (%)	Variable	N (%)
<i>Gender</i>		<i>Education</i>	
Male	11 (61.1%)	High school/GED	3 (16.7%)
Female	7 (38.9%)	Some college	4 (22.2%)
<i>Age</i>		4-year degree	5 (27.8%)
23.00	1 (5.6%)	Master's degree	2 (11.1%)
24.00	1 (5.6%)	Professional (MD/JD)	3 (16.7%)
26.00	1 (5.6%)	<i>Marital Status</i>	
30.00	1 (5.6%)	Single	4 (22.2%)
31.00	1 (5.6%)	Married	9 (50.0%)
32.00	1 (5.6%)	Separated	1 (5.6%)
37.00	1 (5.6%)	Divorced	3 (16.7%)
43.00	1 (5.6%)	Widowed	1 (5.6%)
44.00	2 (11.1%)	<i>Income</i>	
48.00	1 (5.6%)	<\$10K	2 (11.1%)
49.00	1 (5.6%)	\$10K-29,999	4 (22.2%)
51.00	1 (5.6%)	\$50K-69K	2 (11.1%)
55.00	1 (5.6%)	\$70K-89K	2 (11.1%)
56.00	1 (5.6%)	\$90K-100K	2 (11.1%)
57.00	1 (5.6%)	>\$100K	6 (33.3%)
61.00	1 (5.6%)		
65.00	1 (5.6%)		
<i>Ethnicity</i>			
White	18 (100.00%)		

NOTE: Percentages are based on the total sample (N=18)

Table 2

Pearson Correlation Matrix Among Ambiguity Tolerance and Program Completion

	1	2
1. Ambiguity Tolerance	--	-.04
2. Program Completion		--

Research Question 2

Individuals high in AT will report more confrontational coping responses when exposed to alcohol trigger scenarios; while those who are low in AT will report more avoidant coping responses. A bivariate analysis was run to determine the correlation between AT (low or high) and reported coping response (avoid or confront) to alcohol trigger scenarios. There was no significant correlation (.35) between a participant's ambiguity tolerance and reported coping strategy (see Table 3). More specifically, there is not a relationship between AT and coping strategy.

Table 3

Pearson Correlation Matrix Among Ambiguity Tolerance and Coping Strategy

	1	2
1. Ambiguity Tolerance	--	.35
2. Coping Strategy		--

However, a negative correlation was found between participant age and reported coping strategy ($-.687, p < .01$). This suggests that older participants report a more avoidant coping strategy when alcohol triggers are presented, while younger participants report a more confrontational strategy to trigger scenarios (see Table 4).

Table 4

Pearson Correlation Matrix Among Program Completion and Age

	1	2
1. Coping Strategy	--	-.687**
2. Age		--

**Correlation is significant at the 0.01 level (2-tailed).

Summary

An analysis of the relationship between AT, program completion, and reported coping strategy in the sample of clients in an outpatient alcohol treatment program did not produce any significant results. However, age was found to be negatively correlated to coping strategy. Possible explanations of these findings will be discussed in the following chapter.

CHAPTER V

DISCUSSION

Introduction

As described in Chapter I, this study was designed to examine the relationship an individual's ambiguity tolerance may have in the successful completion of an outpatient alcohol treatment program based on a 12-step format. It was hypothesized that individuals with a low AT would have less success than those individuals with a high AT. It was also hypothesized that individuals who had a low AT would report using more avoidant coping strategies when confronted with alcohol trigger scenarios while individuals with high AT would report more confrontational coping strategies.

Purpose of Study

Alcohol use disorders, alcohol dependence, and alcohol abuse are the fourth leading cause of disability in the US (Grant et al., 2004) affecting an estimated 8.5% of the adult population (Hasin et al., 2007). There are as many as 700,000 thousand individuals in treatment programs on any given day (Fuller, & Hiller-Strumhöffel (1999). Of the facilities offering treatment, 81% offer outpatient programs (SAMSHA, 2006) with a majority offering some sort of 12-step facilitation based on the cognitive, behavioral, and spiritual principles of Alcoholics Anonymous at some point during the treatment program (SAMSHA, 2010). However the utilization of AA principles does not come without problems. Some individuals don't complete treatment due to AA's focus

on religion, group sharing, and the expectation of complete abstinence (McKay & Hiller-Sturmhöfel, 2011). For other individuals the conflicting messages received during meetings may become problematic (personal communication, 2009), creating ambiguity. Ambiguity tolerance has been studied as a personality (Fenkle-Brunswick, 1949) and individual difference variable (Nutt, 1993). Persons who are less tolerant of ambiguity are more inclined to think in terms of black-and-white (Frenkle-Brunswick, 1949) finding situations that are unstructured, unclear, or vague as threatening (Norton, 1975). These people experience more stress and feelings of lack of control than their more ambiguity tolerant counterparts (Bauer & Truxillo, 2000; Budner, 1962; Frone, 1990; Howard et al., 1986). Stress can become an obstacle to the person wanting to quit drinking and remain abstinent as it may increase alcohol consumption (Pohorecky, 1991) and relapse rates (Fox et al., 2010; Goeders, 2003; Sinha, 2001). Consequently, for the person who is low in AT and attempting to quit drinking in a program based on the principles of AA, there may be just enough ambiguity to have them leave the program.

A second issue affecting individuals who are attempting to quit drinking, especially those who are seeking outpatient treatment, is the prevalence of alcohol related reminders or triggers. When seasoned AA members offer advice to newcomers about how to deal with these triggers that advise falls into two categories: confront or avoid. In other words, face the trigger head on or go the other way. Exposure to alcohol related cues has been found to increase alcohol cravings (Fox et al., 2007) and the susceptibility to relapse (Becker, 2008) therefore, the choice of coping strategy may affect an individual's success in becoming abstinent.

Many treatment programs offer personalized care for their patients (NIDA, 2009). However, there is no empirical data that addresses ambiguity tolerance or coping strategy and their relationship to successful completion of a treatment program. The purpose of this study was to determine if ambiguity tolerance and coping strategy had any relationship to the completion of an outpatient alcohol treatment program based on the 12-step format of Alcoholics Anonymous. This study was conducted to examine these variables in the hopes of offering program developers another factor they can address when formulating and implementing personalized treatment programs.

Research Questions and Discussion

Research Question 1

Individuals who are high in AT will have a higher rate of program completion while those who are low in AT will have a higher rate of non-completion. The MSTAT-II (McLain, 2009) was used to determine each participant's ambiguity tolerance (high/low). This score was correlated with completion or non-completion of the treatment program. No relationship was found between an individual's level of ambiguity tolerance and their successful completion of an outpatient treatment program. This is a bit surprising given the theoretical background involving AT, stress, alcohol use, and relapse mentioned in previous chapter in this study. AA's format can be construed as confusing with conflicting messages, eliciting more stress for those persons low in AT. Based on the literature, stressful situations prompt more alcohol use and relapse episodes (Fox et al., 2010; Pohorecky, 1991). Therefore it seemed feasible to theorize that in a treatment program based on an AA format, individuals low in AT would drop out at a higher rate than those high in AT.

Research Question 2

Individuals high in AT will report more confrontational coping responses when exposed to alcohol trigger scenarios; while those who are low in AT will report more avoidant coping responses. The SPDS (based on the SPSS; Osborne et al., 2010) was used to determine the participants reported coping strategy (confront or avoid) to alcohol trigger scenarios. The results of the smoking study conducted by Osborne et al. (2010) led to the hypothesis that individuals high in AT would report more confrontational coping strategies. Their study found that participants reporting more confrontational choices in response to smoking trigger scenarios also reported a reduction in tobacco usage. Hence it seemed reasonable to theorize that individuals high in AT would not only be more successful in quitting drinking, but they would also have a more confrontational coping strategy to alcohol triggers.

Age and Coping Strategy

While age and coping strategy were not part of the hypothetical basis for this study, it should be mentioned that the relationship between these variables were negatively correlated. It was found that older participants reported having a more avoidant coping strategy when alcohol triggers were presented, while younger participants report a more confrontational strategy to alcohol trigger scenarios. This is in line with Folkman, Lazarus, Pimley, and Novacek (1987) who found that older adults employ more passive, distancing coping mechanisms while younger people are more “confrontive” and active. This information could be useful in the development of a treatment program, especially one where there is a broad range of client ages.

Factors and Limitations Affecting Results

Perhaps the largest factor that could have contributed to these results was the small number of participants; only one facility agreed to participate, thus greatly reducing the number of possible participants. A small participant pool from each facility was expected, however the design of the study was to recruit participants from several facilities in the hopes of increasing the final number of participants. However, this did not occur. While no specific reason was given for non-participation by the facilities contacted, a few assumptions will be made. A Google search of treatment facilities indicate that anonymity is paramount for persons entering their programs. All facilities contacted offered outpatient care. Clients of this type of program are not required to remain on the facility grounds; rather they receive treatment and go home. Perhaps there was concern that clients involved in the study would come across the researcher at point, eliminating the anonymity that is so vital to their program. This would have been very unlikely as the facilities were located in cities where the researcher did not reside. Also, by allowing an individual not associated with the facility access to clients in their treatment setting may have violated legal precedent of the treatment center. Whatever the reason, participation was minimal.

For the facility that did elect to participate, the stipulation placed on data collection may have also been a contributing factor to the low number of participants. The counselor in charge of outpatient treatment did not permit any data collection by the researcher resulting in no contact with the sample population. Instead, all materials were left at the facility and the counselor distributed the surveys and gathered data. This in of itself was a challenge as all survey materials had to be explained in great enough detail so

the counselor felt comfortable answering possible questions from the participants. There was never any discussion between the researcher and the counselor of questions posed by participants. It is therefore assumed that there were either no questions or the ones asked was easily answered.

In addition, it should be noted that of the 100 surveys given to the facility, only 18 were completed and returned. Based on the weekly contact with the counselor, a number of participants appeared interested in completing the surveys. Surveys and consent forms were given to treatment clients at the beginning of their treatment sessions, however they were not returned. No reason was given why a follow up was not conducted in an attempt to retrieve the survey packet. It is understandable that the counselor had other duties and responsibilities during treatment sessions, other than chasing down survey packets, however had the researcher been given authorization to conduct the study in person, the number of returned surveys may have increased.

Another consideration that may have affected the results that should be addressed is whether or not the participants were in treatment under court order, as this may affect completion outcomes. Peters and Murrin (2000) define drug courts as follows:

“Treatment-based drug courts provide the most prominent example of recent rehabilitative initiatives introduced within the criminal courts. These feature judicial-led treatment programs that establish interagency cooperation and coordination to facilitate involvement in ongoing community treatment and court supervision. Drug courts are based on the premise that arrest and court involvement provide an important opportunity to involve offenders in substance abuse treatment, which can then reduce drug-related behavior.” (p. 73)

While this definition does not specifically mention alcohol use, there are many facets to drug courts. According to the National Association of Drug Court Professionals (2012), DWI courts are one of the many types of drug courts. These special courts are “a distinct post-conviction court system dedicated to changing the behavior of the alcohol-dependent

repeat offender arrested for driving while impaired (DWI).” Drug courts provide long term treatment services for offenders with drug and alcohol use. Belenko (2001) conducted a review of the drug court system. It was found that many programs have evaluated relapse outcomes of the services provided and have determined that the programs offered by drug courts are achieving their goal of reducing relapse. Therefore, participants who may have had court ordered involvement in the treatment program during this study were more likely to remain in the program rather than face possible prosecution (King & Pasquarella, 2009).

Lastly, the population being studied poses its own limitations. First, only persons in outpatient treatment programs based on the 12-step format were surveyed. This effectively eliminated a large pool of potential participants who were participating in other treatment program formats: non-12-step, residential short-term, residential long-term, and partial hospitalization/day treatment. Patients in these programs may have different treatment needs not represented by the current sample. Also, Brady and Sonnem (1999) state that alcoholic patients “may recall only selective events contributed to alcohol use” (p. 264). This selective recall may have affected the accuracy of the SRSS scale in determining the coping style of the participants. Finally, during one conversation with the counselor, it was mentioned that many of the clients arrived to their treatment meetings late, left early or there was simply not enough time to complete the paperwork required for the facility as well as the survey; further reducing the number of participants. All in all, the population recruited for this study, while being an interesting group posed far more obstacles than was accounted for.

Summary Statement

This study attempted to add to the literature on personality variables and substance abuse treatment, specifically outpatient alcohol treatment based on AA's 12-step principles. There was no support for the relationship between AT and successful program completion and AT and coping strategies for trigger scenarios. However, it was found that age and coping strategy are related in that older participants reported more avoidant coping responses than their younger counterparts.

Implications for Future Research

Given this study's lack of significant findings, the personality concept of AT should not be overlooked as to its possible importance to substance use treatment. The Minnesota Multiphasic Personality Inventory (MMPI) has been utilized in the development of the Against Medical Advice (AMA) scale which has been successful in differentiating between patients who do and do not complete treatment (Sladen & Mozkierz, 1985). Also, the Personality-Guided Treatment for Alcohol Dependence (PETAD), which focuses on both personality disorders and alcohol problems, positively affected retention in alcohol treatment programs. Substance abuse treatment is more effective when it takes into consideration the personality issues of the individual (Stefansson & Hesse, 2008). Therefore, it would behoove future research to continue with the study of personality variables, to include AT, and their impact on individuals in treatment.

Several personality factors have been associated with completion rates and relapse for people in substance abuse treatment programs. Traits such as low conscientiousness and high neuroticism have been found to be related to relapse after treatment (Fisher et

al., 1998) while higher scores on novelty-seeking were related to increase dropout rates from treatment (Kravitz et al., 1999). In the current study no discernible relationship was found between AT and completion rates or coping strategies; however the literature continues to point toward the importance of AT in a treatment setting.

Ambiguity tolerance is multifaceted. On the one hand, a person who has a higher tolerance for AT may perceive ambiguous situations as challenging or display a higher degree of creativity (Furnham & Ribchester, 1995; Kirton, 2003; Zenasni et al., 2008). While the individual who has less tolerance for ambiguity may perceive the same situations as threatening (Bauer & Truxillo, 2000; Kang & Singh, 2001) or sources of stress (Brief & Aldag, 1976, Frone, 1990; Howard et al., 1986). These perceptions of stress are of great importance if the person in question is attempting to quit drinking by seeking treatment.

Holmes and Rahe (1967) determined that any change to our routine can become stressful for the individual. Seeking treatment for an addiction is a change to an established routine.

Another potential source of stress for the treatment seeking individual are alcohol triggers. These triggers are not a new concept for treatment programs. Twelve-step recovery groups use two acronyms HALT and PPT to help members prepare for possible triggers (Shenker, 2009).

Many studies have connected stress to alcohol consumption (Fox et al., 2010; Frone, 1999; Russell et al., 1992) and an increased risk for alcoholism (Barr et al., 2009; Sher & Levenson, 1982). Additionally, stress has been connected to alcohol consumption and a vulnerability to substance use, addiction, and relapse (Goeders, 2003; Khantzian, 1985;

Sinha, 2001). Thus, for the individual who wants to become and remain abstinent stress becomes more problematic.

It is the opinion of this researcher that anything that can be done to improve the chances of success for individuals taking the difficult step toward sobriety should be carefully considered. AT is linked stress which has an empirical basis in addiction and relapse. While this study did not produce positive results, the concept of AT should not be set aside as unimportant. In addition, future research should focus on AT in all treatment formats, not just outpatient care.

Summary

In summary, this study was to examine the relationship between AT, completion rates, and coping strategies for clients in an outpatient alcohol treatment program. Past literature suggests that stress affects an individual's susceptibility to substance use and relapse. Research also indicates that individuals low in AT are more susceptible to stress. In addition, for the individual attempting to quit an addictive substance affective and environmental alcohol triggers may also be perceived as stressful. The findings of this study were not significant, however based on past research the importance of AT should not be overlooked.

Continuation of Study

Due to the small sample size and the lack of any significant findings, an additional study was proposed to the Texas State University-San Marcos IRB (IRB# 2011C2131). Chapter VI contains the literature for the second study, highlighting information specific to a college population. Chapter VII covers the methodology for the second study conducted for this thesis to include: hypotheses, instruments, participants,

data collection procedures, analyses uses, and summary. The following chapter, Chapter VIII discusses the results for both alcohol and smoking participants. The final chapter includes a general discussion of chapters dedicated to the second study.

CHAPTER VI
LITERATURE-STUDY 2

Introduction

The sample in the previous study contained an inadequate number of participants to fully explore the relationship between AT, choice of coping strategy, and success in an outpatient alcohol treatment program. Based on this shortfall, additional data was gathered utilizing a convenience sample of students at Texas State University-San Marcos. While the aforementioned sample was not participating in an alcohol treatment program, the *Alcohol Use Identification Test* (AUDIT; World Health Organization [WHO], 2001) and the *Fagerström Test for Nicotine Dependence* (FTND; Heatherton, Kozlowski, Frecker, & Fagerström, 1991) questionnaires were utilized to determine degree of dependence on two addictive substances, alcohol and tobacco. Scores indicative of dangerous alcohol use (AUDIT) and high nicotine dependency (FTND) were used to compare the student sample to the treatment facility sample. In addition, the student sample was given a series of *General Overview Questions* (GOQ) to determine reported success in quitting either drinking or smoking. This information was used to compare to the program completion rates of the facility sample.

This chapter will add to the literature from previous chapters on AT and its relationship to substance use and relapse. First, stress and alcohol consumption and stress and tobacco use among college students will be examined. Next, an overview of AT and its relation to college student's perceptions of classroom structure and success in

learning will be discussed. Then, information relating the facility sample to the student sample will be mentioned. Lastly, a short conclusion will complete the chapter.

Stress and Alcohol Use

For many young adults entering college the transition from high school student to independent college student may entail many stress inducing transitions (financial independence, academic achievement, and social pressure) not previously encountered (personal communications, Fall 2011). At least three-fourths of college students experience moderate levels of stress while 12% reported high stress levels (Pierceall & Keim, 2007). Many of these students use alcohol to help cope with the stress of college life. It has been reported that nearly 40% of college students use alcohol to cope with stress (Pierceall & Keim, 2007) and the number of students who drink to the point of intoxication increases over the course of their first year in college (Pritchard, Wilson, & Yamnitz, 2007). The Harvard School of Public Health College Alcohol Study (CAS) conducted student surveys from the years 1993, 1997, 1991, and 2001 (Wechsler et al., 2002). One hundred nineteen public and private colleges participated in the study. Over half of the colleges (52%) reported an increase in binge drinking by their students. It was also found that there was a significant increase between 1993 and 2001 in students reporting 10 or more drinking episodes within a 30-day period, being drunk more than 3 times in a month, and drinking simply to get drunk (Wechsler et al., 2002). While drinking appears to be part of the college experience, many of these students exhibit behaviors that can be construed as dangerous. Knight, Wechsler and Kuo (2002) used the DSM-IV to categorize students as either being alcohol dependent or having an alcohol abuse problem. In a sample of 14,115 college students it was found that 6.3% were

classified with alcohol dependence and 31.6% with alcohol abuse issues. In addition, 44.1% of the students reported having at least one symptom of either dependence or abuse. This indicates that many college students are at risk for developing some sort of alcohol use disorder.

Stress and Tobacco Use

It is common knowledge that smoking has deleterious health consequences, yet college students continue to use tobacco and smoking among college students is a source of concern (Patterson, Lerman, Kaufmann, Neuner, & Audrain-McGovern, 2004). Rigotti, Lee, and Wechsler (2000) reported the results of a national survey (119 US colleges) on the tobacco use habits of 14,138 US college students. Forty-six percent reported using a tobacco product within the past 12-months with 33% reporting current use of tobacco products. While smoking rates have been examined in college students, a study conducted by Berg, Klatt, Thomas, Ahluwalia, and An (2009) narrowed the research parameters to focus on the students' field of study. An online health survey was given to 6,492 undergraduate students enrolled at the University of Minnesota. It was found that the highest rates of smoking (>1 cigarette in past 30 days) were among Communication, language and cultural studies students (37.4%). Human services and social science students reported the second highest rate (34.0%). However, the average number of cigarettes smoked in the past 30 days was reported to be well over one in 30 days (149 for Communication and 135 for the Social sciences). This information becomes relevant for the current study in that participants were enrolled in psychology courses, which is considered a social science.

As previously mentioned, college can be a stressful time for a student and the need to cope with stress takes many forms. Students offer a variety of reasons why they smoke. Kopstein (2001) reported that the four most common reasons given by college students for smoking were more free time, little or no supervision, friends who smoke, and stress. However, perceived stress is subjective. Naquin and Gilbert (1996) found college students who do not smoke report less perceived stress than their smoking counter parts. Pomerleau and Pomerleau (1991) describe the relationship between stress and smoking and a corresponding link between smoking and anxiety reduction, as being “so well entrenched in the lore concerning cigarette smoking that they have assumed the status of truisms” (p. 599). As mentioned above, college students and stress seem to go hand-in-hand. Not only do they tend to consume alcohol they also use tobacco to cope with stress.

Ambiguity Tolerance

Each individual is unique in how well they tolerate ambiguous situations (Budner, 1962). For the person who has a low level of AT, situations that are uncertain or vague may be perceived as threatening (Norton, 1975), a source of stress (Howard et al., 1986) or reduce their perceived sense of control (Lazarus & Folkman, 1984). However, at the other end of the scale is the person who has a higher level of AT. This individual may perceive these same situations as challenging and interesting (Furnham & Ribchester, 1995). In addition, the more tolerant individuals are better able to cope with conflict and stress (Judge, Thoresen, Pucik, & Welbourne, 1999; Teoh & Foo, 1997), anxiety (Keenan, 1978) and change (Judge et al., 1999) and are less likely to give up when faced with ambiguous tasks (Budner, 1962).

College students may face situations where their ambiguity tolerance may affect their success. One such situation is that of course structure. For the college student, many hours are spent in the classroom. A lack of course structure may become a source of stress or anxiety for students who are low AT, which may affect their success in those courses. In a sample of 101 undergraduate and graduate students, DeRoma, Martin, and Kessler (2003) explored AT and its relation to eight critical areas of course structure (e.g., clear schedule for readings, clear lecture outline, specific grading criteria). They found that low AT undergraduates are most concerned with components of course structure that consist of time management or scheduling, preferring to have clear guidelines of assigned readings. These students also reported more anxiety for changes to the testing schedule occurred. In addition to concerns over test dates, low AT graduate students also reported anxiety when grading criteria was not outlined, test answers had multiple possibilities (instead of a single response), and testing was over applied knowledge (DeRoma et al., 2003). It was therefore suggested, that instructors be aware of the varying levels of AT in students when preparing their curriculum to help facilitate minimal stress in their students.

A second situation where ambiguous situations abound is that of learning a second language (Ely, 1989). An endeavor that entails a certain amount of ambiguity is learning to read a foreign language (Bartholomae & Petrosky, 1986; Clarke & Nation, 1980; Ruddell, 1991). El-Koumy (2000) conducted a study of Egyptian college freshmen. He found that reading a foreign language involved several ambiguous areas: semantic, syntactic, phonological, and cultural. All of which may pose difficulties for students who have low AT. Another aspect in the acquisition of a foreign language is the

development of listening skills. This is also an ambiguous undertaking which involve the use of grammar, vocabulary and pronunciation that may be unfamiliar and unclear to the student (Ely, 1995). Therefore, the student who has a lower threshold for AT may find this skill wrought with feelings of discomfort and stress (Kang & Singh, 2001; Frone, 1990).

Rubin and Thompson (1982) developed a list of skills they deemed necessary for the successful acquisition of a second language: creativity, willing to experiment, look for opportunities to use language skills outside of the classroom, not getting frustrated when a concept is not fully understood, willing to learn from mistakes, make intelligent guesses, utilize contextual clues to increase comprehension and determine meaning. Many of these skills fall in line with what can be defined as ambiguous situations (Budner, 1962; Norton, 1975). Past research has found that a relationship exists between AT and success in language achievement (Chapelle & Roberts, 1986), reading strategies and reading comprehension (El-Koumy, 2000; Mohammad & Assar, 2009). Rubin (1975) stated that a good language learner is one who is comfortable with uncertainty and may in fact enjoy it. Also, Chapelle and Roberts (1986) cited that AT was a predictor of language proficiency for ESL (English as a second language). They also found that students who had higher levels of AT also had higher scores on reading comprehension. Ely (1989) found that AT affected the strategies used by university level Spanish students. Students with higher AT tended to concentrate efforts on general meaning while those students with lower levels of ambiguity employed strategies for language learning that were more focused on specific details. Keeping with this, Kondo-Brown (2006) found that intolerance of ambiguity (low AT) may be indicative of a lack of

motivation or drive in acquiring the skills necessary when learning to read in a second language (i.e. *kanji*). Lastly, AT had a significant correlation on students' learning, listening comprehension, imitation, and desire for more use of language during instruction (Naiman, Frohlich, Stern, & Todesco, 1996). Therefore, students who have a higher level of AT may be more successful in the ambiguous task of learning a second language.

Student and Facility Sample

The students that comprise the sample for the second study, while not currently involved in outpatient treatment, have similarities to the treatment facility sample from study one. Parallels listed below:

1. Participants from study one were clients in an outpatient alcohol treatment facility. These individuals are attempting to quit drinking. To maintain continuity between studies, all students surveyed have attempted to quit an addictive substance, either alcohol or tobacco.
2. The treatment facility from study one utilized a format following the 12-step guidelines of Alcoholics Anonymous. Interviews with AA members reported having heard conflicting messages during meetings. This may create a certain amount of ambiguity for the members. For the individual who has a low AT these ambiguous messages may induce feelings of discomfort (Bauer & Truxillo, 2000) and increase perceived stress (Brief & Aldag, 1976; Howard et al., 1986) which may, in turn, make it more difficult for the person to stay in the program and remain abstinent (Fox et al., 2010; Sinha, 2001). The result is the unsuccessful completion of their treatment program.

The student sample may also contend with ambiguous situations and the stress incurred during those situations. Pierceall and Keim (2007) reported that at least 75% of college students experience moderate levels of stress. Many of these students use alcohol (Pierceall & Keim, 2007) and tobacco (Kopstein, 2001) to cope with this stress. However, the studies previously mentioned have indicated that students who have a high AT can be successful in ambiguous situations, such as learning a foreign language. Therefore, mirroring the first study, students who are high AT may have more success at quitting drinking or smoking than their low AT counterparts.

3. For participants of both studies how the individual chooses to deal with triggers (alcohol or tobacco) may be crucial to their maintained abstinence. Stressful events and exposure to alcohol cues may increase the person's susceptibility to relapse (Becker, 2008). Therefore, with both alcohol and tobacco readily available to students, the student sample faces the same triggers as the facility sample.

Conclusion

This chapter reviewed the survey instruments administered to the student sample (AUDIT, FTND, and GOQ). Stress and alcohol use by college students was reviewed. It was found that three-fourths of college students report being stressed and 40% of college students reported using alcohol as way of coping with stress (Pierceall & Keim, 2007). In addition, through the use of the DSM-IV (Knight et al., 2002) found that 44% of students surveyed had at least one symptom of either alcohol abuse or dependence. Next, stress and tobacco use among college students was examined. Forth-six percent of

college students report using tobacco in the past year (Wechsler, 2000) with stress being reported as one of the reasons for its use (Kopstein, 2001). AT and its relation to student success was also reviewed. It was found that in the acquisition of a second language, students higher in AT were more successful in reading comprehension (Chapelle & Roberts, 1986). Finally, parallels between the sample of the first study and the student sample for the second study were formed.

CHAPTER VII

METHOD-STUDY 2

Introduction

This chapter describes the research methodology, methods, and materials for this study, which consists of the following sections: research perspective and design, research questions and corresponding hypotheses, participants, instruments, data collection procedures and environment, statistical analyses, validity and reliability, and summary

Research Perspective and Design

This study utilized a correlational design and assessed the relationship between AT (high v. low), confront v. avoidant coping and degree of alcohol or nicotine dependence on self-reported success in quitting smoking or drinking. To assess these variables surveys were given to students at Texas State University-San Marcos who agreed to participate in the study.

Research Questions and Corresponding Hypotheses

In order to test the four main questions proposed by this study, four hypotheses were formulated.

- 1.) Individuals who are high in AT will report a higher rate of success at quitting drinking while those who are low in AT will report a lower rate of success at quitting drinking.

- 2.) Individuals high in AT will report more confrontational coping responses when exposed to alcohol trigger scenarios; while those who are low in AT will report more avoidant coping responses to the same scenarios.
- 3.) Individuals who are high in AT will report a higher rate of success at quitting smoking while those who are low in AT will report a lower rate of success at quitting smoking.
- 4.) Individuals high in AT will report more confrontational coping responses when exposed to smoking trigger scenarios; while those who are low in AT will report more avoidant coping responses to the same scenarios.

Participants

The study sample consisted of students enrolled in the Psychology Department at Texas State University-San Marcos. Data were gathered from 96 students. However, data from 68 students was excluded from the analysis due to never having attempted to quit either drinking or smoking; leaving a final sample of 28 students. The remaining sample consisted 11 men and 17 women with ages ranging from 17 to 46 years ($M = 24.96$; $SD = 7.20$). The racial composition of the sample was White (50.0%), Hispanic (17.9%), White, Non-Hispanic (10.7%), Bi-racial/Mixed Race (14.3%), and African American (7.1%). IRB approval from Texas State University-San Marcos, Texas was obtained for this study (2011C2131). Participation was completely voluntary. Informed consent was obtained prior to participation and each individual had the option not to participate in the study at no risk to their standing in the university.

Research Instruments

Participants were asked to respond to specific measures based on their attempt to quit either smoking or drinking. Measures used include: *Demographic Questionnaire* (all participants), *General Overview Questions* (all participants), *Alcohol Use Disorders Identification Test* (alcohol use participants only), *Self-Regulating Drinking Scale* (alcohol use participants only), *Fagerström Test for Nicotine Dependence* (tobacco use participants only), *Self-Regulating Smoking Scale* (tobacco use participants only), and *Multiple Stimulus Types Ambiguity Tolerance Scale-II* (all participants).

Demographic Questionnaire

The *Demographic Questionnaire* (DQ) was designed to obtain basic demographic information; gender, age, race, education level, marital status, and income.

General Overview Questions

The *General Overview Questions* (GOQ) questionnaire was designed to accomplish several outcomes (see Appendix C). The first outcome was to determine if the participant had attempted to quit either smoking or drinking. Question 1, “Have you ever attempted to quit smoking or drinking?” was utilized to determine the appropriate course of action for the participants’ involvement in the study. Responses were “yes” (1) or “no” (0). If the response was “no” the participant was directed to the *MSTAT-II* measure. If the response was “yes” the participant continued with the next three questions to determine the degree of success in quitting either smoking or drinking. Rate your initial degree of success in quitting smoking/drinking? a) very successful (3), b) somewhat successful (2), and c) very unsuccessful (1). Scores ranged from 4-14 with higher scores indicating more reported success in quitting smoking or drinking.

At the end of this questionnaire, the participant was directed to either a series of surveys for alcohol or tobacco use. Alcohol use surveys included the *Alcohol Use Disorders Identification Test* (AUDIT) and the *Self-Regulating Drinking Scale* (SRDS) to assess alcohol use. Tobacco use surveys included the *Fagerström Test for Nicotine Dependence* (FTNS) and *Self-Regulating Smoking Scale* (SRSS) to assess cigarette use. These participants also completed the *MSTAT-II* as their final measure.

Alcohol Use Disorders Identification Test

The *Alcohol Use Disorders Identification Test* (AUDIT; WHO, 2001) is a 10-question self-report survey designed to screen for hazardous and harmful alcohol consumption (see Appendix D). Questions assess the following: alcohol consumption (items 1-3), drinking behavior (items 4-6), adverse reactions (items 7-8), and alcohol-related problems (items 9-10). Responses are scored on a range from 0-4, giving a maximum score of 40. A score of 8 or higher indicated a strong likelihood of hazardous or harmful alcohol consumption (WHO, 2001) with a score of 4 as the suggested cutoff for women (Enoch & Goldman, 2002). Numerous studies have found the AUDIT to be both reliable and valid (Knight, Sherritt, Harris, Gates, & Chang, 2003; Pal, Jena, & Yadav, 2004; Gache, Michaud, Landry, Accietto, Arfaoui, Wenger, & Daepfen, 2005; Dybek et al., 2006). It is worth noting that various studies have reached better sensitivity values with different cut-off scores (Adewuya, 2005; Dybek et al., 2006).

Fagerström Test for Nicotine Dependence

The *Fagerström Test for Nicotine Dependence* (FTND; Heatherton, Kozlowske, Frecker, & Fagerström, 1991) is a revision of the eight-item *Fagerström Tolerance Questionnaire* (Fagerström, 1978) which was found to be a good measure of tobacco (see

Appendix E). The FTND is a six-item self-report questionnaire designed to aid in diagnosing the degree of nicotine dependency among clinical populations. Scoring is based on a numerical value ranging from 0-3, dependent on the item. The six-items include: 1) time to first cigarette after waking (0-3), 2) degree of difficulty in refraining from smoking in forbidden areas (0-1), 3) most difficult cigarette to give up (0-1), 4) number of cigarettes smoked during the day (0-3), 5) time of day in which most smoking occurs (0-1), and 6) smoking when ill (0-1). Dependency is classified into two categories, high dependency (HD: FTND \geq 4) and low dependency (LD; FTND < 4; Ríos-Bedoya, Snedecor, Pomerleau, & Pomerleau, 2008). Previous research had indicated internal consistencies for the FTND to range from 0.64–0.68 (Etter, 2005; Haddock, Lando, Klesges, Talcott, & Renaud, 1999; Heatherton et al., 1991; Pomerleau et al., 1994). While this score is lower than the suggested minimum of 0.70 (Nunally & Bernstein, 1994) this measure is being utilized as an indicator of degree of nicotine dependence and not for the treatment of nicotine addiction.

Multiple Stimulus Types Ambiguity Tolerance Scale-II

The *Multiple Stimulus Types Ambiguity Tolerance Scale-II* (MSTAT-II; McLain, 2009) is a 13-item measure designed to measure an individual's cognitive tolerance range (aversion to attraction) for situations that are unfamiliar, insoluble, or complex (see Appendix A). The MSTAT-II measures the participants' degree of ambiguity tolerance based on five stimulus types: 1) ambiguous stimuli in general, "I am tolerant of ambiguous situations," 2) complex stimuli, "I avoid situations that are too complicated for me to easily understand," 3) uncertain stimuli, "I find it hard to make a choice when the outcome is uncertain," 4) New/unfamiliar/novel stimuli, "I prefer familiar situations

to new ones, and 5) insoluble/illogical/internally inconsistent stimuli, “Problems that cannot be considered from just one point of view are a little threatening.” Items are structured as five-point Likert-type responses ranging from “1: strongly disagree” to “5: strongly agree”. Classification of participants into high AT or low AT was determined by a median split of total scores; scores ranging between 13-38 indicates a lower ambiguity tolerance while scores between 39-65 indicate a higher ambiguity tolerance. McLain (2009) reported an internal consistency reliability of .83 (Cronbach’s alpha) which did not increase if any of the 13 items were eliminated.

Self-Regulating Drinking Scale

The *Self-Regulating Drinking Scale (SRDS)* is a revised version of the *Self-Regulating Smoking Scale (SRSS)*; Osborne et al., 2010). The SRSS was an experimenter-generated survey designed to assess the success of an individual’s efforts to abstain from smoking. The SRSS is a ten-item questionnaire that evaluates a person’s responses to addiction triggers based on confrontation or avoidance strategies (see Appendix B). The SRDS was created to parallel the predictive ability of the SRSS for participants who have attempted to quit drinking. The SRDS is also a ten-item questionnaire that assesses a person’s responses to addiction triggers based on confrontation or avoidance strategies. Each item was scored with a value of 1 (avoid strategy) or 2 (confront strategy) with a score range of 10-20. Item example: A friend invites you to a party, and in hearing the names of some people who will also be attending, you realize that some of them are drinkers. Would you be more likely to: a) Turn down the invitation to the party in order to avoid being around drinking (avoid, 1) or b) Decide to go the party but prepare yourself mentally to keep from having a drink

(confront, 2). Classification of participants into avoidant or confrontational coping strategies was determined by a median split of total scores; total SRDS score of 10-14 indicates more avoidant coping strategies, while a total score of 15-20 indicates more confrontational coping strategies. The SRSS was generated for another study and has not yet been subjected to either reliability or validity analyses. Therefore, the SRDS does not have either reliability or validity to report.

Self-Regulating Smoking Scale

The *Self-Regulating Smoking Scale* (SRSS, Osborne, Etherton, Sapstead, & Ramos, 2010) was an experimenter-generated survey designed to assess the success of an individual's efforts to abstain from smoking (see Appendix F). The SRSS is a ten-item questionnaire that evaluates a person's responses to addiction triggers based on confrontation or avoidance strategies. Each item was scored with a value of 1 (avoid strategy) or 2 (confront strategy) with a score range of 10-20. Item example: A friend of yours offers you a cigarette. Would you be more likely to: a) Make up an excuse to leave (avoid, 1) or b) Reject the cigarette telling the friend you are quitting (confront, 2). Classification of participants into avoidant or confrontational coping strategies was determined by a median split of total scores; total SRSS score of 10-16 indicates more avoidant coping strategies, while a total score of 17-20 indicates a more confrontational coping strategies. The SRSS was generated for another study and has not yet been subjected to either reliability or validity analyses.

Data Collection Procedures and Environment

Instructors in the Department of Psychology at a Central Texas University were contacted via email as possible sources for research participants. Information included in

the email was the IRB proposal outlining the project and researcher contact information. Face-to-face meetings were scheduled with faculty agreeing to participate. Topics of discussion included an overview of the study, a thorough explanation of the consent form (must be voluntary; no repercussions for non-participation; non-signed copy given to participant), a complete explanation of survey instruments, and procedures for data collection. After all questions and concerns were addressed dates and times were scheduled for the researcher to speak directly to students at the beginning of a class period.

During the class meeting, a brief summary of the research idea was given to the students along with the dates, times, and location of the data collection. Students were informed of the instructor's extra credit procedures and informed that a sign in sheet would be provided for this purpose. At the end of the presentation, time was allotted for questions or concerns. Students were thanked for their time.

Upon arrival to the study location, participants were asked to sign the extra credit sheet. They were given a consent form, offered a short explanation as to the intent of the document, instructed to read it and to ask questions if necessary. Before students were asked to sign the consent form, they were informed that participation was completely voluntary, they could discontinue the study at any time, and non-participation would not endanger their standing with their instructor or the university. Students were then directed to the signature page. Upon receipt of the signed consent form each scale was briefly explained to participants before the packet of questionnaires was handed out. Participants were asked to follow the directions, and to answer all questionnaires as truthfully as possible. Upon completion of the survey packet, participants were instructed

to put their packet into the envelope provided. By not having the researcher accept the packet, another level of confidentiality was added to the process. Each participant was thanked for their participation.

Statistical Analysis

SPSS, version 18.0, was used to analyze the data for this study by generating both descriptive and correlational statistics. For the first and third research questions, a bivariate correlation was used to determine the relationship between AT and reported success at quitting drinking or smoking. The second and fourth research questions also used a bivariate correlation to analyze the relationship between AT and reported coping strategy for alcohol or smoking trigger scenarios. Classification of participants into high or low AT was determined by a median split of total score.

Validity

Due to the non-experimental design of this study no causal relationships can be determined. Participants were not randomly selected; only students who reported either smoking or drinking used. External validity can be affected due to the small sample size and only students from one department at one university were recruited; thus reducing generalizability to other populations. The AUDIT is both a reliable and valid measure of alcohol use (Knight et al., 2003; Pal et al., 2004; Gache et al., 2005; Dybek et al., 2006). The high internal consistency of the MSTAT-II (McLain, 2009) provided a reliable measure of AT. While the FTND has a low reported internal consistency range of 0.64-0.68, it was used as an indicator of nicotine dependence, not nicotine addiction. The reliability and validity of the SRSS and SRDS have yet to be determined.

Summary

The previous chapters described the literature, methods, and results used to examine the relationship between AT, confront/avoid coping strategies, and successful completion of a 12-step based outpatient alcohol treatment program.

This chapter focused on the methodology, methods, and materials for this study of a student sample. Through the use of bivariate correlations, the relationship between ambiguity tolerance and reported success in quitting drinking or smoking was examined. In addition, a bivariate correlation was used to evaluate the relationship between ambiguity tolerance and conflict/avoidant coping strategies to alcohol or smoking trigger scenarios. The AUDIT was used to determine alcohol use. The FTND determined level of nicotine dependence. The MSTAT-II was used to evaluate the participant's level of ambiguity tolerance. The SRDS and SRSS assessed the participant's choice of conflict or avoidant coping strategies to alcohol or smoking trigger scenarios. All measures, with the exception of the SRSS and SRDS were evaluated for validity and reliability by past research cited in this chapter.

CHAPTER VIII

RESULTS-STUDY 2

Introduction

The previous chapter explained the design and methodology utilized in this study for selecting participants, identifying variables, describing measurement instruments, processes of data collection, statistical analyses used to evaluate data, and validity and reliability of measures. Chapter VII discusses the methodological summary of this study which is presented the following section.

Methodological Summary

Due to the very small number of participants in the previous study, the current convenience sample was utilized to gather additional data to further explore the relationship between AT, choice of coping strategy, and success in quitting an addictive substance. This study was conducted to augment the information gathered from the aforementioned study (see previous chapters). However, the current convenience sample of student participants required the use of several additional measures in order to assess the level of dependency on an addictive substance and reported success in quitting that substance.

In this study, participants were students attending Texas State University-San Marcos, enrolled in an undergraduate psychology course, and had attempted to quit either drinking or smoking. All participants were asked to complete the following:

Demographic Questionnaire, General Overview Questions (GOQ) to assess reported success in quitting drinking or smoking, and the *Multiple Stimulus Types Ambiguity Tolerance Scale-II (MSTAT-II)* to determine high or low ambiguity tolerance. Students who reported being consumers of alcohol were asked to complete the following additional questionnaires: *Alcohol Use Disorders Identification Test (AUDIT)* to identify harmful alcohol use and the *Self Regulating Drinking Scale (SRDS)* to determine reported trigger coping strategy. Students who reported being smokers were asked to complete the following additional questionnaires: *The Fagerström Test for Nicotine Dependence (FTND)* to determine high or low dependence on nicotine and the *Self Regulating Smoking Scale (SRSS)* to determine reported coping strategy to smoking trigger scenarios.

Data were analyzed based on level of ambiguity tolerance (high/low) in relation to reported success in quitting either drinking or smoking. Additional data were gathered to test the relationship between level of ambiguity tolerance (high/low) and choice of coping strategy (conflict/avoid) to alcohol or smoking trigger scenarios.

Results

Participants

Twenty-eight students enrolled at Texas State University-San Marcos participated in this study. A total of 39.3% ($n = 11$) were male and 60.7% ($n = 17$) were female. The age of the participants ranged from 17-46 years ($M = 24.96$, $SD = 7.20$). Fifty percent of the participants were White ($n = 14$), while the remaining participants were White, non-Hispanic (10.7%, $n = 3$), African-American (7.1%, $n = 2$), Hispanic (17.9%, $n = 5$), and Bi-racial/mixed race (14.3%, $n = 4$). Education level was reported by all participants;

7.1% ($n = 2$) finished high school or received a GED, 50.0% ($n = 14$) had some college, 14.3% ($n = 4$) had a 2-year degree, 21.4% ($n = 6$) Bachelor's degree, and 7.1% ($n = 2$) had a Master's degree. Marital status was reported by all participants; single (85.7%), married (10.7%), and divorced (3.6%). Complete demographic information can be found in Table 5.

Table 5

Participant Demographics: Student Sample

Variable	N (%)	Variable	N (%)
<i>Gender</i>		<i>Education</i>	
Male	11 (39.3%)	High school/GED	2 (7.1%)
Female	17 (60.7%)	Some college	14 (50.0%)
<i>Age</i>		2-year degree	4 (14.3%)
17.00	1 (3.6%)	4-year degree	6 (21.4%)
18.00	4 (14.3%)	Master's degree	2 (7.1%)
19.00	2 (7.1%)	<i>Marital Status</i>	
20.00	1 (3.6%)	Single	24 (85.7%)
21.00	4 (14.3%)	Married	3 (10.7%)
22.00	2 (7.1%)	Divorced	1 (3.6%)
23.00	2 (7.1%)	<i>Income</i>	
26.00	3 (10.7%)	<\$10K	2 (7.1%)
28.00	1 (3.6%)	\$10K-29,999	9 (32.1%)
29.00	4 (14.3%)	\$30K-49K	8 (28.6%)
34.00	1 (3.6%)	\$50K-69K	3 (10.7%)
35.00	1 (3.6%)	\$70K-89K	2 (7.1%)
41.00	1 (3.6%)	\$90K-100K	3 (10.7%)
46.00	1 (3.6%)		
<i>Ethnicity</i>			
White	14 (50.0%)		
White, non-Hispanic	3 (10.7%)		
African-American	2 (7.1%)		
Hispanic	5 (17.9%)		
Bi-racial/mixed race	4 (14.3%)		

NOTE: Percentages are based on the total sample (N=28); Income (N=27)

Alcohol Use Participants

AUDIT. The AUDIT is used to screen for harmful alcohol consumption (WHO, 2001). Total AUDIT scores were calculated. As per the AUDIT, both gender and total score were used to classify participants into either non-harmful (1) or harmful (2) alcohol use. Six male participants completed the AUDIT. Fifty percent ($n = 3$) reported non-harmful alcohol use while 50.0% ($n = 3$) reported harmful use (see Table 6).

Table 6

AUDIT Classification: Male

	Frequency	Percent
Non-harmful	3	50.0
Harmful	3	50.0

Ten female participants completed the AUDIT. Twenty percent ($n = 2$) reported non-harmful alcohol use while 80.0% ($n = 8$) reported harmful use (see Table 7).

Table 7

AUDIT Classification: Female

	Frequency	Percent
Non-harmful	2	20.0
Harmful	8	80.0

General Overview Questionnaire. The GOQ was used to evaluate participant ($n = 16$) success in quitting drinking. A median split was run to determine score ranges; 1-10, unsuccessful (1) and 11-14, successful (2). See table 8.

Table 8

Success Total Score Distribution: Drinking

Score	Frequency	Percent
6.00	1	3.6
7.00	2	7.1
8.00	2	7.1
9.00	1	3.6
10.00	3	10.7
11.00	1	3.6
12.00	3	10.7
13.00	2	7.1
14.00	1	3.6

Score: 1-10; unsuccessful

Score: 11-14; successful

Participants were then categorized as either unsuccessful ($n = 9, 56.3\%$) or successful ($n = 7, 43.8\%$). See table 9.

Table 9

Success Category: Drinking

	Frequency	Percent
Un-successful	9	56.3
Successful	7	43.8

Research Question 1. Individuals who are high in AT will report a higher rate of success at quitting drinking while those who are low in AT will report a lower rate of success at quitting drinking. A bivariate analysis was run to determine the correlation between participants AT category (high or low) and reported success or non-success at quitting drinking. AT was negatively correlated with reported success ($-.524; p < .05$) which indicates a negative relationship between an individual's level of ambiguity tolerance and their reported success at abstaining from alcohol use (see Table 10). This suggests that participants with higher levels of AT have a lower reported success rate at quitting drinking while those with lower levels of AT report more success at quitting drinking.

Table 10

Pearson Correlation Matrix Among Ambiguity Tolerance and Reported Success at Quitting Drinking

	1	2
1. Ambiguity Tolerance	--	-.524*
2. Success	-.524*	--

*Correlation is significant at the 0.05 level (2-tailed)

Research Question 2. Individuals high in AT will report more confrontational coping responses when exposed to alcohol trigger scenarios; while those who are low in AT will report more avoidant coping responses to the same scenarios. A bivariate analysis was run to determine the correlation between participants AT category (high or low) and reported coping strategy (confront or avoid) to alcohol trigger scenarios. AT was negatively correlated with reported strategy ($-.630; p < .01$) which indicates a negative relationship between an individual's level of ambiguity tolerance and their

reported coping strategy to alcohol trigger scenarios (see Table 11). This suggests that participants with higher levels of AT report more avoidant coping strategies while those with lower levels of AT report more confrontational coping strategies to trigger scenarios.

Table 11

Pearson Correlation Matrix Among Ambiguity Tolerance and Reported Coping Strategy: Alcohol Trigger Scenarios

	1	2
1. Ambiguity Tolerance	--	-.630**
2. Coping Strategy	-.630**	--

**Correlation is significant at the 0.01 level (2-tailed)

Tobacco Use Participants

FTND. The FTND is used to screen for nicotine dependency (Heatherton et al., 1991). As per the FTND, a score range of 0-3 indicates low dependency (1) while scores in the 4-10 range are indicative of high nicotine dependency (2). Twelve participants reported tobacco use with 35.7% ($n = 10$) classified as low nicotine dependent and 7.1% ($n = 2$) classified as high nicotine dependent (see Table 12).

Table 12

FTND Classification

	Frequency	Percent
Low Dependency	10	35.7
High Dependency	2	17.1

Score: 0-3; low dependency

Score: 4-10; high dependency

General Overview Questionnaire. The GOQ was used to evaluate participant success in quitting smoking. A frequency distribution was run to determine score ranges; 1-10, unsuccessful (1) and 11-14, successful (2). See table 13.

Table 13

Success Total Score Distribution: Smoking

Score	Frequency	Percent
8.00	1	3.6
9.00	1	3.6
10.00	2	7.1
11.00	1	3.6
13.00	1	3.6
14.00	6	21.4

Score: 1-10; unsuccessful

Score: 11-14; successful

Participants were then categorized as either unsuccessful ($n = 4$, 33.3%) or successful ($n = 8$, 66.7%). See table 14.

Table 14

Success Category: Smoking

	Frequency	Percent
Un-successful	4	33.3
Successful	8	66.7

Research Question 3. Individuals who are high in AT will report a higher rate of success at quitting smoking while those who are low in AT will report a lower rate of

success at quitting smoking. A bivariate analysis was run to determine the correlation between AT (low or high) and reported success at quitting smoking. There was no significant correlation between a participants AT and reported success at quitting smoking (.120). In other words, there was no relationship between a participants AT and reported success at quitting smoking (see Table 15).

Table 15

Pearson Correlation Matrix Among Ambiguity Tolerance and Reported Success at Quitting Smoking

	1	2
1. Ambiguity Tolerance	--	.120
2. Success	.120	--

Research Question 4. Individuals high in AT will report more confrontational coping responses when exposed to smoking trigger scenarios; while those who are low in AT will report more avoidant coping responses to the same scenarios. A bivariate analysis was run to determine the correlation between participants AT category (high or low) and reported coping strategy (confront or avoid) to smoking trigger scenarios. There was no significant correlation between a participants AT and reported coping strategy (-.371). More specifically, there is not a relationship between AT and coping strategy (see Table 16).

Table 16

Pearson Correlation Matrix Among Ambiguity Tolerance and Reported Coping Strategy: Smoking Trigger Scenarios

	1	2
1. Ambiguity Tolerance	--	-.371
2. Coping Strategy	-.371	--

Summary

An analysis of the relationship between AT, reported success at quitting drinking and reported coping strategy for alcohol trigger scenarios in this sample of college students. It was found that there was a negative correlation between AT and reported success at quitting drinking ($-.524$; $p < .05$). In addition, a negative relationship was also found for AT and reported coping strategy for alcohol trigger scenarios ($-.630$; $p < .01$). However, no significant relationship was found between AT and success at quitting smoking or between AT and reported coping strategies for smoking trigger scenarios. Possible explanations of these finding will be discussed in the following chapter.

CHAPTER IX

DISCUSSION-STUDY 2

Introduction

The original study utilized participants who were currently undergoing treatment at an outpatient alcohol treatment facility. Due to the small sample size and the lack of any significant findings this second study was proposed. As described in Chapters VI, this study was designed to examine the relationship between an individual's ambiguity tolerance, reported success at quitting smoking or drinking, and reported coping strategy for alcohol/smoking trigger scenarios. It was hypothesized that individuals with a low AT would report less success in quitting drinking/smoking than those individuals with a high AT. It was also hypothesized that individuals who had a low AT would report using more avoidant coping strategies when confronted with alcohol/smoking trigger scenarios while individuals with high AT would report more confrontational coping strategies.

Purpose of Study

As mentioned previously, personality traits such as conscientiousness and neuroticism (Fisher et al., 1998), as well as novelty seeking (Bottlender & Soyka, 2005) have been associated with relapse rates and completion of treatment programs. However, the personality attribute of ambiguity tolerance has received little attention in its relationship to the successful termination of the use of an addictive substance or its relationship to an individual's coping strategy when faced with substance specific

triggers while trying to remain abstinent. This second study was conducted to further examine the relationship between AT, reported success at abstinence and coping strategies.

Research Questions

Research Question 1

Individuals who are high in AT will report a higher rate of success at quitting drinking while those who are low in AT will report a lower rate of success at quitting drinking. The MSTAT-II (McLain, 2009) was used to determine each participant's ambiguity tolerance (high/low). This score was correlated with reported success or non-success at quitting drinking. It was found that AT was negatively correlated with reported success ($-.524; p < .05$) which suggests that participants with higher levels of AT have a lower reported success rate at quitting drinking while those with lower levels of AT report more success at quitting drinking.

Research Question 2

Individuals high in AT will report more confrontational coping responses when exposed to alcohol trigger scenarios; while those who are low in AT will report more avoidant coping responses to the same scenarios. The SPDS (based on the SPSS; Osborne et al., 2010) was used to determine each participant's reported coping strategy (confront or avoid) to a series of scenarios depicting possible alcohol trigger situations. AT was negatively correlated with reported coping strategy ($-.630; p < .01$). This suggests that those individuals who were categorized as high AT reported more avoidant coping strategies to trigger scenarios while those categorized as low AT report more confrontational coping strategies.

Research Question 3

Individuals who are high in AT will report a higher rate of success at quitting smoking while those who are low in AT will report a lower rate of success at quitting smoking. The MSTAT-II (McLain, 2009) was used to determine each participant's ambiguity tolerance (high/low). This score was correlated with reported success or non-success at quitting smoking. There was no significant correlation between a participant's AT and reported success at quitting smoking (.120) therefore no relationship was found between participants' AT and reported success at quitting smoking.

Research Question 4

Individuals high in AT will report more confrontational coping responses when exposed to smoking trigger scenarios; while those who are low in AT will report more avoidant coping responses to the same scenarios. The SPSS (Osborne et al., 2010) was used to determine each participant's reported coping strategy (confront or avoid) to a series of smoking trigger scenarios. Once again, no relationship was found between AT and reported coping strategy (-.371).

Factors and Limitations

It was hypothesized that students who were categorized as high AT would have more reported success in quitting drinking and report using more confrontation coping strategies to alcohol trigger scenarios. However, in the student sample, AT appeared to have the opposite effect on reported success and coping strategies as was theorized. It was found that the low AT participants were more successful at quitting smoking and reported more confrontational coping strategies while the high AT individuals were less successful and more avoidant.

These findings go against the theoretical basis of this study. As the literature suggests, students who are higher in AT are more successful in coursework that is inherently ambiguous, such as learning a second language. (Ely, 1989). Furthermore, Kondo-Brown (2006) found that low AT students were less motivated to develop the skills necessary for learning to read in a second language. However, success at quitting smoking and drinking was a task where low AT appeared to be beneficial. While the reasons for this are unclear, several conjectures will be made.

As with the first study, perhaps the largest factor affecting results was the small number of participants. Data were gathered from 96 students, however only the data from 28 students included information about quitting smoking or drinking. First, to ensure all students had an equal opportunity to participate, it was suggested by the faculty members who offered extra credit that all students be recruited. As the numbers suggest, a large number of students participated, but only a handful had useable data. A second explanation to the small number of viable surveys was the first question on the General Overview Questionnaire, "Have you ever attempted to quit smoking or drinking?" Several participants mentioned that they were currently consuming alcohol or using tobacco and had never attempted to or had a desire to quit. Thus, a "no" response immediately eliminated the data from the study.

Again, reflecting similarities to the facility sample individuals who use alcohol "may recall only selective events contributed to [their] alcohol use" (p. 264, Brady & Sonnem, 1999). This selective memory could have had an effect on the response patterns for the scales used to evaluate drinking (AUDIT) and smoking (FTND) patterns and reported coping strategies (SRDS/SRSS) to trigger scenarios in the student sample.

Some of the students surveyed may have had co-occurring nicotine dependence which may have affected their response for the GOQ portion of the study. Grant, Hasin, Chou, Stinson, and Dawson (2004) conducted an analysis of the data gathered from the National Epidemiologic Survey on Alcohol and Related Conditions. A sample of 43,093 individuals (18 years or older, non-institutionalized, US citizens) were given face-to-face, computerized interviews to determine both comorbidity and prevalence of psychiatric disorders and nicotine dependence. The results indicated that the nicotine dependent respondents had either a drug use disorder (52.4%) or an alcohol use disorder (AUD; 34.5%). While the student participants were not diagnosed as having either a drug or alcohol use disorder it is feasible that a portion of the students recruited may have had an AUD, which might have been a factor in their reported attempt to quit.

Many studies have delved into drinking and smoking behaviors of college students (e.g., Ames et al., 2010; Dierker et al., 2006; Nichter, Nichter, Carkoglu, & Lloyd-Richardson, 2010; Weitzman & Chen, 2005). Weitzman and Chen (2005) found that in a national survey of college students, 98% of smokers also reported being consumers of alcohol. While this may not be surprising, some of the students surveyed may have had co-occurring nicotine dependence which may have affected their response for the GOQ portion of the study. Grant, Hasin, Chou, Stinson, and Dawson (2004) conducted an analysis of the data gathered from the National Epidemiologic Survey on Alcohol and Related Conditions. A sample of 43,093 individuals (18 years or older, non-institutionalized, US citizens) were given face-to-face, computerized interviews to determine both comorbidity and prevalence of psychiatric disorders and nicotine dependence. The results indicated that the nicotine dependent respondents had either a

drug use disorder (52.4%) or an alcohol use disorder (AUD; 34.5%). While the student participants were not diagnosed as having either a drug or alcohol use disorder it is feasible that a portion of the students recruited may have had an AUD, which might have been a factor in their reported attempt to quit.

For the students who may be nondaily smokers, their smoking identity may affect their responses to the surveys administered for this study as not all participants who reported smoking may identify themselves as smokers. Sutfin et al. (2012) found that many students who smoke do not do so on a daily basis. Twenty nine percent reported smoking during the past 30 days and of these students, 70% reported smoking on a non-daily basis. In a study funded by the Centers for Disease Control (Levinson et al., (2007) surveyed students at eight colleges about their smoking identity. Over half of the students surveyed who smoked one or more cigarettes in the past month did not consider themselves smokers. Therefore, some of the students may have used cigarettes in the past and simply stopped smoking. However, if they did not smoke on a daily basis they may have not thought of themselves as a smoker. Consequently, a response of “no” to the question of attempting to quit smoking was the logical choice.

Discussion

As discussed previously in this study, AT is multifaceted. An individual's tolerance for ambiguous situations may be the difference between perceiving those situations as challenging (Furnham & Ribchester, 1995) and the amount of effort put forth to overcome those challenges (Kondo-Brown, 2006). For the student population AT was related to success in learning a foreign language, yet the results for this study did not concur. While the results were not in line with the facility study, it should be

reiterated that AT should remain a variable of interest in the study of alcohol use, relapse and success in treatment.

Summary Statement

This study attempted to augment the data gathered from the facility study on the personality variables of AT and its relationship to success in quitting an addictive substance (alcohol or tobacco) and choice of coping strategy to alcohol or smoking trigger scenarios. It was found that the low AT participants were more successful at quitting smoking and reported more confrontational coping strategies while the high AT individuals were less successful and more avoidant, which is contrary to the hypotheses of the study.

APPENDIX A

The Multiple Stimulus Types Ambiguity Tolerance Scale-II (MSTAT-II) Questionnaire

Items

1. I don't tolerate ambiguous situations well.
2. I would rather avoid solving a problem that must be viewed from several different perspectives.
3. I try to avoid situations that are ambiguous.
4. I prefer familiar situations to new ones.
5. Problems that cannot be considered from just one point of view are a little threatening.
6. I avoid situations that are too complicated for me to easily understand.
7. I am tolerant of ambiguous situations.
8. I enjoy tackling problems that are complex enough to be ambiguous.
9. I try to avoid problems that don't seem to have only one "best" solution.
10. I generally prefer novelty over familiarity.
11. I dislike ambiguous situations.
12. I find it hard to make a choice when the outcome is uncertain.
13. I prefer a situation in which there is some ambiguity.

Procedure for Scoring the MSTAT-II

All questions are scored 1-5. The response coding is as follows:

	1	2	3	4	5
All Questions	Strongly agree	Disagree	Neither agree or disagree	Agree	Strongly agree

APPENDIX B

Self-Regulating Drinking Scale (SRDS) Questionnaire items

1. A friend invites you to a party, and in hearing the names of some people who will also be attending, you realize that some of them are drinkers.

Would you be more likely to:

- a) Turn down the invitation to the party in order to avoid being around drinking.
 - b) Decide to go the party but prepare yourself mentally to keep from having a drink.
2. You are housesitting for a neighbor, who is a drinker. You see a bottle of alcohol sitting on the kitchen counter.

Would you be more likely to:

- a) Leave it where it is.
 - b) Put it somewhere out of sight
3. At work a co-worker invites you to lunch. You know from past experience that this person likes to have a drink after meals and has offered drinks to others after meals.

Would you be more likely to:

- a) Turn down the invitation to lunch to avoid being offered a drink.
- b) Decide to go to lunch but remind yourself ahead of time not have a drink if one is offered.

4. You are ready to drive home. You realize that going your normal route will take you past your favorite bar.

Would you be more likely to:

- a) Take a different route to avoid the temptation
 - b) Go the way you normally go promising yourself you will not stop and have a drink.
5. You have to go to the grocery store and buy a few things. You do not want to buy alcohol.

Would you be more likely to:

- a) Take just enough money to get what you need so you are less likely to buy alcohol.
 - b) Go like you normally would reminding yourself that you will not buy alcohol.
6. You don't have anything to do and the boredom is reminding you that you want a drink.

Would you be more likely to:

- a) Find another activity (watch TV, call a friend, exercise, etc.) to distract yourself from thinking about drinking.
 - b) Confront the thought and remind yourself why you are quitting drinking.
7. You start to think about drinking.

Would you be more likely to:

- a) Confront the thought and try to think it through.
- b) Think about something else and try to take your mind off drinking.

8. A friend of yours offers you a drink.

Would you be more likely to:

- a) Make up an excuse to leave.
 - b) Reject the drink telling the friend you are quitting.
9. You are cleaning your apartment and you see a half full bottle of alcohol.

Would you be more likely to:

- a) Move to a different room to clean.
 - b) Continue doing what you are doing.
10. You are talking on the phone to a friend who is a heavy drinker. He/she invites you over.

Would you be more likely to:

- a) Make up an excuse not to go.
- b) Agree to go over and tell yourself, "I am not going to drink."

Procedure for Scoring SRDS

Questions 1, 3, 4, 5, 6 are scored a (1, avoid) and b (2, confront). Questions 2 and 7 are scored a (2, confront) and b (1, avoid). The response coding is as follows:

	a	b
Questions 1, 3, 4, 5, 6	1	2
Questions 2 and 7	2	1

APPENDIX C

General Overview Questions (GOQ) Questionnaire Items

1. Have you ever attempted to quit smoking or drinking?
 - a. Yes
 - b. No
2. Rate your initial degree of success in quitting smoking/drinking.
 - a. Very successful
 - b. Somewhat successful
 - c. Very unsuccessful
3. How long have you been able to maintain your success?
 - a. Less than a month
 - b. 1-3 months
 - c. 4-6 months
 - d. 7-9 months
 - e. 10-12 months
 - f. More than 12 months

4. In the past 12 months, how many times have you attempted to quit smoking or drinking?
- a. 1
 - b. 2-5
 - c. 6-10
 - d. 11 or more

Procedure for Scoring GOQ

Question 1 is scored a (1, yes) and b (0, no). Question 2 is scored a (3), b (2), and c (1). Question 2 is scored a (3), b (2), and c (1). Question 3 is scored a (6), b (5), c (4), d (3), e (2), and f (1). Question 4 is scored a (4), b (3), c (2), and d (1). The response coding is as follows:

	a	b	c	c	e	f
Question 1	1	0				
Question 2	3	2	1			
Question 3	6	5	4	3	2	1
Question 4	4	3	2	1		

APPENDIX D

Alcohol Use Disorder Identification Test (AUDIT) Questionnaire Items

1. How often do you have a drink containing alcohol?

Never	Monthly or less	Two to four times a month	Two to three times a week	Four or more times a week
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2. How many drinks containing alcohol do you have on a typical day when you are drinking?

1 or 2	3 or 4	5 or 6	7 to 9	10 or more
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3. How often do you have six or more drinks on one occasion?

Never	Less than monthly	Weekly	Daily	Daily or almost daily
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4. How often during the last year have you found that you were not able to stop drinking once you had started?

Never	Less than monthly	Weekly	Daily	Daily or almost daily
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5. How often during the last year have you failed to do what was normally expected from you because of drinking?

Never	Less than monthly	Weekly	Daily	Daily or almost daily
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6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?

Never	Less than monthly	Weekly	Daily	Daily or almost daily
-------	-------------------	--------	-------	--------------------------

7. How often during the last year have you had a feeling of guilt or remorse after drinking?

Never	Less than monthly	Weekly	Daily	Daily or almost daily
-------	-------------------	--------	-------	--------------------------

8. How often during the last year have you been unable to remember what happened the night before because you had been drinking?

Never	Monthly	Two to Four times a month	Two to three times a week	Four or more times a week
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9. Have you or someone else been injured as a result of your drinking?

No Yes, but not in the Yes, during the last
last year last year year

10. Has a relative or friend, or a doctor or other health worker been concerned about your drinking or suggested you cut down?

No Yes, but not in the Yes, during the last
last year last year year

Procedure for Scoring AUDIT

Questions 1-8 are scored 0, 1, 2, 3 or 4. Questions 9 and 10 are scored 0, 2 or 4 only. The response coding is as follows:

	0	1	2	3	4
Question 1	Never	Monthly or less	Two to four times monthly	Two to three times per week	Four or more times per week
Question 2	1 or 2	3 or 4	5 or 6	7 to 9	10 or more
Questions 3-8	Never	Less than monthly	Weekly	Daily	Daily or almost daily
Questions 9-10	No		Yes, but no in the last year		Yes, during the last year

The minimum score (for non-drinkers) is 0 and the maximum possible score is 40. A score of 8 or more indicates a strong likelihood of hazardous or harmful alcohol consumption.

APPENDIX E

Fagerström Test for Nicotine Dependence (FTND)

1. How soon after you wake up do you smoke your first cigarette?
 - a. Within 5 minutes
 - b. 6-30 minutes
 - c. 31-60 minutes
 - d. After 60 minutes

2. Do you find it difficult to refrain from smoking in places where it is forbidden e.g. in church, at the library, in cinema, etc.?
 - a. Yes
 - b. No

3. Which cigarette would you hate most to give up?
 - a. The first one in the morning
 - b. All others

4. How many cigarettes/day do you smoke?
 - a. 10 or less
 - b. 11-20
 - c. 21-30
 - d. 31 or more

5. Do you smoke more frequently during the first hours after waking than during the rest of the day?
 - a. Yes
 - b. No

6. Do you smoke if you are so ill that you are in bed most of the day?
 - a. Yes
 - b. No

Procedure for Scoring FTND

Question 1

A = 3 B = 2 C = 1 D = 0

Question 2

A = 1 B = 0

Question 3

A = 1 B = 0

Question 4

A = 0 B = 1 C = 2 D = 3

Question 5

A = 1 B = 0

Question 6

A = 1 B = 0

APPENDIX F

Self-Regulating Smoking Scale (SRSS) Questionnaire Items

1. A friend invites you to a party, and in hearing the names of some people who will also be attending, you realize that some of them are smokers.

Would you be more likely to:

- c) Turn down the invitation to the party in order to avoid being around smoking.
 - d) Decide to go the party but prepare yourself mentally to keep from having a cigarette.
2. You are housesitting for a neighbor, who is a smoker. You see a pack of cigarettes sitting on the kitchen counter.

Would you be more likely to:

- a) Leave it where they it is.
 - b) Put it somewhere out of sight
3. At work a co-worker invites you to lunch. You know from past experience that this person likes to have a cigarette after meals and has offered cigarettes to others after meals.

Would you be more likely to:

- a) Turn down the invitation to lunch to avoid being offered a cigarette.
- b) Decide to go to lunch but remind yourself ahead of time not have a cigarette if one is offered.

4. You are ready to drive home. You realize that going your normal route will take you past your favorite place to buy cigarettes.

Would you be more likely to:

- a) Take a different route to avoid the temptation
 - b) Go the way you normally go promising yourself you will not stop and buy cigarettes.
5. You have to go to the grocery store and buy a few things. You do not want to buy cigarettes.

Would you be more likely to:

- c) Take just enough money to get what you need so you are less likely to buy cigarettes.
 - d) Go like you normally would, reminding yourself that you will not buy cigarettes.
6. You don't have anything to do and the boredom is reminding you that you want to smoke.

Would you be more likely to:

- a) Find another activity (watch TV, call a friend, exercise, etc.) to distract yourself from thinking about smoking.
 - b) Confront the thought and remind yourself why you are quitting smoking.
7. You start to think about smoking.

Would you be more likely to:

- c) Confront the thought and try to think it through.
- d) Think about something else and try to take your mind off smoking.

8. A friend of yours offers you a cigarette.

Would you be more likely to:

- a) Make up an excuse to leave.
 - b) Reject the cigarette telling the friend you are quitting.
9. You are cleaning your apartment and you see a partial pack of your own cigarettes.

Would you be more likely to:

- c) Move to a different room to clean.
 - d) Continue doing what you are doing.
10. You are talking on the phone to a friend who is a chain smoker. He/she invites you over.

Would you be more likely to:

- a) Make up an excuse not to go.
- b) Agree to go over and tell yourself, "I am not going to smoke."

Procedure for Scoring SRSS

Questions 1, 3, 4, 5, 6 are scored a (1, avoid) and b (2, confront). Questions 2 and 7 are scored a (2, confront) and b (1, avoid). The response coding is as follows:

	a	b
Questions 1, 3, 4, 5, 6	1	2
Questions 2 and 7	2	1

REFERENCES

- Acton, G. S. (2003). Measurement of impulsivity in a hierarchical model of personality traits: Implications for substance use. *Substance Use and Misuse, 38*, 67-83.
- Adewuya, A. O. (2005). Validation of the Alcohol Use Disorders Identification Test (AUDIT) as a screening tool for alcohol-related problems among Nigerian university students. *Alcohol and Alcoholism, 40*, 575-577.
- Ames, S. C., Stevens, S. R., Werch, C. E., Carlson, J. M., Schroeder, D. R., Kiros, G. E., ...Offord, K. P. (2010). The association of alcohol consumption with tobacco use in black and white college students. *Substance Use and Misuse, 45*, 1230-1244.
- Anderson, S., & Schwartz, A. (1992). Intolerance of ambiguity and depression. *Social Cognition, 10*, 271-298.
- Barr, C. S., Dvoskin, R. L., Gupte, M., Sommer, W., Sun, H., Schwandt, M. L.,...Heilig, M. (2009). Functional CRH variation increases stress-induced alcohol consumption in primates. *Proceedings of the National Academy of Sciences of the United States of America, 106*, 14,593-14,598.
- Bartholomae, D., & Petrosky, T. (1986). *Facts, artifacts, and counterfacts : Theory and method for a reading and writing course*. David Bartholomae and Anthony R. Petrosky (Eds.). Portsmouth, NH : Boynton/Cook.

- Basiaux, P., Le Bon, O., Dramaix, M., Massat, I., Souery, D., Mendlewicz, J., Pelc, I., & Verbanck, P. (2001). Temperament and Character Inventory (TCI) personality profile and sub-typing in alcoholic patients: A controlled study. *Alcohol and Alcoholism, 36*, 584-587.
- Bauer, T. N., & Truxillo, D. M. (2000). Temp-to-permanent employees: A longitudinal study of stress and selection success. *Journal of Occupational Health Psychology, 5*, 337-346.
- Baum, A. (1990). Stress, intrusive imagery, and chronic distress. *Health Psychology, 9*, 653-675.
- Becker, H. C. (2008). Alcohol dependence, withdrawal, and relapse. *Alcohol Research and Health, 31*, 348-361.
- Belenko, S. (2001). Research on drug courts: A critical review 2001 update. *The National Center on Addiction and Substance Abuse at Columbia University*. Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.192.2535>
- Berg, C. J., Klatt, C. M., Thomas, J. L., Ahluwalia, J. S., & An, L. C. (2009). The relationship of field of study to current smoking status among college students. *College Student Journal, 43*, 744-754.
- Bottlender, M., & Soyka, M. (2005). Impact of different personality dimensions (NEO Five-Factor Inventory) on the outcome of alcohol-dependent patients 6 and 12 months after treatment. *Psychiatry Research, 136*, 61-67.
- Brady, K. T., & Sonnem, S. C. (1999). The role of stress in alcohol use, alcoholism, treatment, and relapse. *Alcohol Research and Health, 23*, 263-271.

- Brandon, T. H., Vidrine, J. I., & Litvin, E. B. (2007). Relapse and relapse prevention. *Annual Review of Clinical Psychology, 3*, 257-284.
- Breese, G. R., Chu, K., Dayas, C. V., Funk, D., Knapp, D. J., Koob, G. F.,... Weiss, F. (2005). Stress enhancement of craving during sobriety: a risk for relapse. *Alcoholism: Clinical and Experimental Research, 29*, 185-195.
- Brief, A. P., & Aldag, R. J. (1976). Correlates of role indices. *Journal of Applied Psychology, 61*, 468-472.
- Budner, S. (1962). Intolerance of ambiguity as a personality variable. *Journal of Personality, 30*, 29-50.
- Campbell, J. D., & Tesser, A. (1983). Motivational interpretations of hindsight bias: An individual differences analysis. *Journal of Social Psychology, 120*, 235-243.
- Centers for Disease Control and Prevention (CDC). (2010). *Alcohol and public health: Frequently asked questions*. Retrieved from <http://www.cdc.gov/alcohol/faqs.htm#healthProb>
- Chapelle, C., & Roberts, C. (1986). Ambiguity tolerance and field independence as predictors in English as a second language. *Language Learning, 36*, 27-45.
- Clarke, D. F., & Nation, I. S. (1980). Guessing the meanings of words from context: Strategy and techniques. *System, 8*, 211-220.
- Conger, J. J. (1956). Reinforcement theory and the dynamics of alcoholism. *Quarterly Journal of Studies on Alcohol, 17*, 296-305.
- Cullen, F., Link, B., Wolfe, N., & Frank, J. (1985). The social dimensions of correctional officer stress. *Justice Quarterly, 2*, 505-533.

- Dierker, L., Lloyd-Richardson, E., Stolar, M., Flay, B., Tiffany, S., Collings, L,...The Tobacco Etiology Research Network. (2006). The proximal association between smoking and alcohol use among first year college students. *Drug and Alcohol Dependence, 81*, 1-9.
<http://dx.doi.org.libproxy.txstate.edu/10.1016/j.drugalcdep.2005.05.012>
- Dybek, I., Bischof, G., Grothues, J., Reinhardt, S., Meyer, C., Hapke, U.,...Rumpf, H.J. (2006). The reliability and validity of the Alcohol Use Disorders Identification Test (AUDIT) in a German general practice population sample. *Journal of Studies on Alcohol, 67*, 473-481.
- El-Koumy, A. S. (2000). *Differences in Florida reading comprehension among high-, middle-, and low-ambiguity tolerance students*. Paper presented at the National Symposium on English Language Teaching. Ain Shams University: Egypt, March 21-23. Retrieved from
<http://eric.ed.gov.libproxy.txstate.edu/PDFS/ED445534.pdf>
- Ely, C. (1989). Tolerance of ambiguity and use of second language strategies. *Foreign Language Annals, 22*, 437-445.
- Ely, C. M. (1995). Tolerance of ambiguity and the teaching of ESL. In J. M. Reid (Ed.), *Learning styles in the ESL/EFL classroom* (pp. 85-95). New York: Heinle & Heinle.
- Enoch, M. & Goldman, D. (2002). Problem drinking and alcoholism: Diagnosis and treatment. *American Family Physician, 65*, 441-449.

- Etter, J. (2005). A comparison of the content-, construct- and predictive validity of the cigarette dependence scale and the Fagerström Test for Nicotine Dependence. *Drug and Alcohol Dependence*, 77, 259-268.
- Fagerström, K. O. (1978). Measuring degree of physical dependency to tobacco smoking with reference to individualization of treatment. *Addictive Behaviors*, 3, 235-241.
- Fisher, L. A., Elias, J. W., & Ritz, K. (1998). Predicting relapse to substance abuse as a function of personality dimensions. *Alcoholism: Clinical and Experimental Research*, 22, 1041–1047.
- Folkman, S. & Lazarus, R. S. (1980). An analysis of coping in a middle-aged community sample. *Journal of Health and Social Behavior*, 21, 219-239.
- Folkman, S., & Lazarus, R. S. (1986). Appraisal, coping, health status and psychological symptoms. *Journal of Personal and Social Psychology*, 50, 517-579.
- Folkman, S., Lazarus, R. S., Gruen, R. L., & DeLongis, A. (1986). Appraisal, coping, health status, and psychological symptoms. *Journal of Personality & Social Psychology*, 50, 571-579.
- Folkman, S., Lazarus, R. S., Pimley, S., & Novacek, J. (1987). Age differences in stress and coping processes. *Psychology and Aging*, 2, 171-184.
- Fox, H. C., Bergquist, K. L., Hong, K. I., & Sinha, R. (2007). Stress-induced and alcohol cue-induced craving in recently abstinent alcohol-dependent individuals. *Alcoholism: Clinical and Experimental Research* 31, 395-403.
- Fox, H. C., Bergquist, K. L., Peihua, G., & Sinha, R. (2010). Interactive effects of cumulative stress and impulsivity on alcohol consumption. *Alcoholism, Clinical and Experimental Research*, 34, 1376-1385.

- Frenkel-Brunswik, E. (1949). Intolerance of ambiguity as an emotional perceptual personality variable. *Journal of Personality, 18*, 108-143.
- Frone, M. (1990). Intolerance of ambiguity as a moderator of the occupational role stress-strain relationship. *Journal of Organizational Behaviour, 11*, 309-320.
- Frone, M. R. (1999). Work stress and alcohol use. *Alcohol Research and Health, 23*, 284-291.
- Frone, M. R. (2006). Prevalence and distribution of alcohol use and impairment in the workplace: A U.S. national survey. *Journal of Studies on Alcohol, 76*, 147-156.
- Fuller, R. K., & Hiller-Strumhöffel, S. (1999). Alcoholism treatment in the United States: An Overview. *Alcohol Research and Health, 23*, 69-77.
- Furnham, A., & Ribchester, T. (1995). Tolerance of ambiguity: A review of the concept, its measurement and applications. *Current Psychology: Development, Learning, Personality, 14*, 179-199.
- Gache, P., Michaud, P., Landry, U., Accietto, C., Arfaoui, S., Wenger, O., & Daeppen, J.B. (2005). The Alcohol Use Disorders Identification Test (AUDIT) as a screening tool for excessive drinking in primary care: Reliability and validity of a French version. *Alcoholism: Clinical and Experimental Research, 29*, 2001-2007.
- Goeders, N. E. (2003). The impact of stress on addiction. *European Neuropsychopharmacology, 13*, 435-441.

- Grant, B. F., Stinson, F. S., Dawson, D. A., Chou, S. P., Dufour, M. C., Compton, W., et al. (2004). Prevalence and co-occurrence of substance use disorders and independent mood and anxiety disorders: Results from the National Epidemiologic Survey on Alcohol and Related Conditions. *Archives of General Psychiatry*, *61*, 807–816.
- Grant, B.F., Hasin, D.S., Chou, S.P., Stinson, F. S., & Dawson, D. A. (2004). Nicotine dependence and psychiatric disorders in the United States: Results from the National Epidemiologic Survey on Alcohol and Related Conditions. *Archives of General Psychiatry*, *61*, 1107-1115.
- Gray, J. A. (1987). *The psychology of fear and stress* (2nd ed.). Cambridge, England: Cambridge University Press.
- Haddock, C., Lando, H., Klesges, R. C., Talcott, G., & Renaud, E. A. (1999). A study of the psychometric and predictive properties of the Fagerström Test for Nicotine Dependence in a population of young smokers. *Nicotine & Tobacco Research*, *1*, 59-66.
- Harwood, H. (2000). *NIAAA, Updating estimates of the economic costs of alcohol abuse in the United States: Estimates, update methods, and data*. Retrieved from <http://pubs.niaaa.nih.gov/publications/economic-2000/>
- Hasin, D. S., Stinson, F. S., Ogburn, E., & Grant, B. F. (2007). Prevalence, correlates, disability, and comorbidity of DSM-IV alcohol abuse and dependence in the United States. *Archives of General Psychiatry*, *64*, 830-842.

- Heatherton, T., Kozlowski, L., Frecker, R., & Fagerström, K. (1991). The Fagerström Test for Nicotine Dependence: A revision of the Fagerström Tolerance Questionnaire. *British Journal Of Addiction*, 86, 1119-1127.
- Higgins, S. T., Badger, G. J. & Budney, A. J. (2000). Initial abstinence and success in achieving longer term cocaine abstinence. *Experimental and Clinical Psychopharmacology*, 8, 377-386.
- Holmes, T. H., & Rahe, R. H. (1967). The social readjustment rating scale. *Journal of Psychosomatic Research*, 11, 213-218.
- Howard, J. H., Cunningham, D. A., & Rechnitzer, P. A. (1986). Role ambiguity, type A behavior, and job satisfaction: Moderating effects on cardiovascular and biochemical responses associated with coronary risk. *Journal of Applied Psychology*, 71, 95-101.
- Judge, T. A., Thoresen, C. J., Pucik, V., & Welbourne, T. M. (1999). Managerial coping with organizational change: A dispositional perspective. *Journal of Applied Psychology*, 84, 107-122.
- Kang, L. S., & Singh, R. (2001), Identifying stressors at work-A case of employees in the electronics industry. *Decision*, 31, 51-72.
- Karasek, R. A., Baker, D., Marxer, F., Ahlbom, A., & Theorell, T. (1981). Job decision latitude, job demands, and cardiovascular disease: A prospective study of Swedish men. *American Journal of Public Health*, 71, 694-705.
- Keenan, A. (1978). Selection interview performance and intolerance of ambiguity. *Psychological Reports*, 42, 353-354.

- Keenan, J., & McBain, G. (1979). Effects of type A behaviour, intolerance of ambiguity, stress and work-related outcomes and locus of control on the relationship between roles. *Journal of Occupational Psychology*, 52, 277-285.
- Keinan, G., (1994). Effects of stress and tolerance of ambiguity on magical thinking. *Journal of Personality and Social Psychology*, 67, 48-55.
- Khantzian, E. J. (1985). The self-medication hypothesis of addictive disorders: Focus on heroin and cocaine dependence. *American Journal of Psychiatry*, 142, 1259-1264.
- King, R. S., & Pasquarella, J. (2009). *Drug courts: A review of the evidence*. The Sentencing Project. Retrieved from http://www.sentencingproject.org/doc/dp_drugcourts.pdf
- Kirton, M. J. (2003). *Adaption-Innovation in the Context of Diversity and Change*. Hove, East Sussex, England: Routledge.
- Knight, J., Sherritt, L., Harris, S., Gates, E., & Chang, G. (2003). Validity of brief alcohol screening tests among adolescents: A comparison of the AUDIT, POSIT, CAGE, and CRAFFT. *Alcoholism: Clinical & Experimental Research*, 27, 67-73.
- Knight, J. R., Wechsler, H., & Kuo, M. (2002). Alcohol abuse and dependence among U.S. college students. *Journal of Studies on Alcohol*, 63, 263-270.
- Kondo-Brown, K. (2006). Affective variables and Japanese L2 reading ability. *Reading in a Foreign Language*, 18, 55-71. Retrieved from <http://www.nflrc.hawaii.edu/RFL/April2006/kondobrown/kondobrown.pdf>

- Kopstein, A. (2001). *Tobacco use in America: Findings from the 1999 National Household Survey on Drug Abuse* (Analytic Series: A-15, DHHS Publications No. SMA 02-3622). Rockville, MD: Substance Abuse and Mental Health Services Administration, Office of Applied Studies.
- Krantz, D. S., & McCeney, M. K. (2002). Effects of psychological and social factors on organic disease: A critical assessment of research on coronary heart disease. *Annual Review of Psychology, 53*, 341-369.
- Kravitz, H. M., Fawcett, J., McGuire, M., Kravitz, G. S., & Whitney, M., (1999). Treatment attrition among alcohol-dependent men: Is it related to novelty seeking personality traits? *Journal of Clinical Psychopharmacology, 19*, 51-56.
- Kushner, M. G., Abrams, K., & Borchardt, C. (2000). The relationship between anxiety disorders and alcohol use disorders: A review of major perspectives and findings. *Clinical Psychology Review, 20*, 149-171.
- Lazarus, R. S. (1993). Coping theory and research: Past, present, and future. *Psychosomatic Medicine, 55*, 234-247.
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York, NY: Springer Publishing Company, Inc.
- Lazarus, R.S., & Folkman, S. (1999). *Stress and emotion: A new synthesis*. New York, NY: Springer Publishing Company, Inc.
- Levinson, A. H., Campo, S., Gascoigne, J., Jolly, O., Zakharyan, A., & Vu Tran, Z. (2007). Smoking, but not smokers: Identity among college students who smoke cigarettes. *Nicotine and Tobacco Research, 9*, 845-852.

- Marlatt, G.A. (1979). Alcohol use and problem drinking: A cognitive - behavioral analysis. In P.C. Kendall, & S.D. Hollon (Ed.), *Cognitive-behavioral intervention: Theory, research and procedures*. New York: Academic Press.
- Matteson, M., & Ivancevich, J. (1987). *Controlling work stress: Effective human resource and management strategies*. San Francisco, CA: Jossey-Boss.
- Mayo Clinic. (2010). *Alcoholism: Complications*. Retrieved January 15, 2011 from <http://www.mayoclinic.com/health/alcoholism/DS00340/DSECTION=complications>
- McGovern, P. E., Glusker, D. L., Exner, L. J., & Voigt, M. M. (1996). Neolithic resinated wine. *Nature*, *381*, 480-480.
- McKay, J. R., Alterman, A. I., Cacciola, J. S., O'Brien, C. P., Koppenhaver, J. M., & Shepard, D. S. (1999). Continuing care for cocaine dependence: Comprehensive 2 year outcomes. *Journal of Consulting and Clinical Psychology*, *67*, 420-427.
- McKay, J. R., Alterman, A. I., Cacciola, J. S., Rutherford, M. J., O'Brien, C. P. & Koppenhaver, J. (1997). Group counseling versus individualized relapse prevention aftercare following intensive outpatient treatment for cocaine dependence: Initial results. *Journal of Consulting and Clinical Psychology*, *65*, 778-788.
- McKay, J. R., & Hiller-Sturmhöfel, S. (2011). Treating alcoholism as a chronic disease: Approached to long-term continuing care. *Alcohol Research and Health*, *33*, 356-370.

- McClain, D. (2009). Evidence of the properties of an ambiguity tolerance measure: The Multiple Stimulus Types Ambiguity Tolerance Scale-II (MSTAT-II). *Psychological Reports, 201*, 975-988.
- Miles, R. H. (1975). An empirical test of causal inference between role perceptions of conflict and ambiguity and various personal outcomes. *Journal of Applied Psychology, 60*, 334-339.
- Mohammad, H. K. & Assar, M. (2009). Reading comprehension ability and metacognitive awareness of reading strategies among high, mid and low ambiguity tolerance EAP students. *Iranian Journal of Applied Language, 71*-108. Retrieved from http://www.sid.ir/En/VEWSSID/J_pdf/125320090204.pdf
- Moos, R. H. (1997). Assessing approach and avoidance: Coping skills and their determinants and outcomes. *Indian Journal Of Clinical Psychology, 24*, 58-64.
- Moran, S., Wechsler, H., & Rigotti, N. (2004). Social smoking among US college students. *Pediatrics, 114*, 1028-1034.
- Naiman, N., Frohlich, M., Stern, H., & Todesco, A. (1996). *The good language learner: Modern languages in practice*. Toronto, Canada: Ontario Institute for Studies in Education.
- Naquin, M. R., & Gilbert, G. G. (1996). College students' smoking behavior, perceived stress, and coping styles. *Journal of Drug Education, 26*, 367-376.
- National Association of Drug Court Professionals. (2012). *Types of drug courts: DWI court*. Retrieved from <http://www.nadcp.org/learn/what-are-drug-courts/models>

- National Institute on Alcohol Abuse and Alcoholism. (NIAAA). (1998). *Economic costs of alcohol and drug abuse*. Retrieved from <http://www.niaaa.nih.gov/NewsEvents/NewsReleases/Pages/economic.aspx>
- National Institute on Alcohol Abuse and Alcoholism (NIAAA). (2000). *10th Special Report to the U.S. Congress on Alcohol and Health*. NIH Pub No. 00-1583. Retrieved from <http://pubs.niaaa.nih.gov/publications/10report/intro.pdf>
- National Institute on Alcohol Abuse and Alcoholism (NIAAA). (2007). *FAQs for the general public*. Retrieved from <http://www.niaaa.nih.gov/FAQs/General-English/default>
- National Institute on Drug Abuse. (NIDA). (2009). *Principles of drug addiction treatment: A research based guide* (2nd ed.). Retrieved from <http://drugabuse.gov/PDF/PODAT/PODAT.pdf>
- Nichter, M., Nichter, M., Carkoglu, A., & Lloyd-Richardson, E. (2010). Smoking and drinking among college students: "It's a package deal". *Drug and Alcohol Dependence, 106*, 16-20.
- Nielsen, P., Røjskjær, S., & Hesse, M. (2007). Personality-guided treatment for alcohol dependence: A quasi-randomized experiment. *The American Journal on Addictions, 16*, 357-364.
- Norton, R. (1975). Measurement of ambiguity tolerance. *Journal of Personality Assessment, 39*, 607-619.
- Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory*. New York, NY: McGraw-Hill.

- Nutt, P. (1993). Flexible decision styles and the choices of top executives. *Journal of Management Studies*, 30, 695-721.
- Osborne, R.E., Etherton, J., Sapstead, C. & Ramos, M. (2010). "Bring it on" or "I don't want to see it": The impact of confronting vs. avoidance strategies in abstinence efforts. Poster presented at the Addictions Studies Conference, Washington, DC, October 2010.
- Pal, H., Jena, R., & Yadav, D. (2004). Validation of the Alcohol Use Disorders Identification Test (AUDIT) in urban community outreach and de-addiction center samples in North India. *Journal of Studies on Alcohol*, 65, 794-800.
- Palmer, R. S., Murphy, M. K., Piselli, A., & Ball, S. A. (2009). Substance user treatment dropout from client and clinician perspectives: A pilot study. *Substance Use & Misuse*, 44, 1021-1038.
- Patterson, F., Lerman, C., Kaufmann, V. G., Neuner, G. A., & Audrain-McGovern, J. (2004). Cigarette smoking practices among american college students: Review and future directions. *Journal of American College Health*, 52, 203-210.
- Peters, R. H., & Murrin, M. R. (2000). Effectiveness of treatment-based drug courts in reducing criminal recidivism. *Criminal Justice and Behavior*, 27, 72-96.
- Pierceall, E. A., & Keim, M. C. (2007). Stress and coping strategies among community college students. *Community College Journal of Research and Practice*, 31, 703-712.
- Pohorecky, L. A. (1991). Stress and alcohol interaction: An update of human research. *Alcoholism: Clinical and Experimental Research*, 15, 438-459.

- Pomerleau, C. S., Carton, S. M., Lutzke, M. L., Flessland, K. A., & Pomerleau, O. F. (1994). Reliability of the Fagerstrom Tolerance Questionnaire and the Fagerstrom Test for Nicotine Dependence. *Addictive Behaviors, 19*, 33-39.
- Pomerleau, O. F., & Pomerleau, C. S. (1991). Research on stress and smoking: Progress and problems. *British Journal of Addiction, 86*, 599-603.
- Pritchard, M. E., Wilson, G. S., & Yamnitz, B. (2007). What predicts adjustment among college students? A longitudinal panel study. *Journal of American College Health, 56*, 15-22.
- Ptacek, J. T., Smith, R. E. & Dodge, K. L. (1994). Gender differences in coping with stress: When stressor and appraisals do not differ. *Personality and Social Psychology Bulletin, 20*, 421-430.
- Rigotti, N. A., Lee, J. E., & Wechsler, H. (2000). US College students' use of tobacco products: Results of a national survey. *Journal of the American Medical Association, 284*, 699-705.
- Ríos-Bedoya, C., Snedecor, S. M., Pomerleau, C. S., & Pomerleau, O. F. (2008). Association of withdrawal features with nicotine dependence as measured by the Fagerström Test for Nicotine Dependence (FTND). *Addictive Behaviors, 33*, 1086-1089.
- Rizzo, J. R., House, R. J., & Lirtzman, S. I. (1970). Role conflict and ambiguity in complex organizations. *Administrative Sciences Quarterly, 15*, 150-163.
- Robbins, A. S., Spence, J. T., & Clark, H. (1991). Psychological determinants of health and performance: The tangled web of desirable and undesirable characteristics. *Journal of Personality and Social Psychology, 61*, 755-765.

- Roth, S., & Cohen, L. J. (1986). Approach, avoidance, and coping with stress. *American Psychologist, 41*, 813-819.
- Rubin, J. (1975). What the “good language learner” can teach us. *TESOL Quarterly, 9*, 41-51. Retrieved from <http://www.jstor.org/stable/3586011>
- Rubin, J., & Thompson, I. (1982). *How to be a more successful language learner*. Boston, MA: Heinle & Heinle.
- Ruddell, M. R. (1991). Students’ metacognitive response to ambiguous literacy tasks. *Reading and Research Instruction, 31*, 1-11.
- Russell, J., & Lawton, J. M. (2010). *Exploring psychology: Study and revision guide*. United Kingdom: Oxford Schools.
- Russell, M., Skinner, J. B., Frone, M. R., & Mundar, P. (1992). Stress and alcohol use: Moderating effects of gender, coping, and alcohol expectancies. *Journal of Abnormal Psychology, 101*, 139-152.
- Schenker, M. D. (2009). *A clinician’s guide to 12-step recovery*. New York, NY: W. W. Norton & Company, Inc.
- Schnall, P. L., Schwartz, J. E., Landsbergis, P. A., Warren, K., & Pickering, T. G. (1998). A longitudinal study of job strain and ambulatory blood pressure: Results from a three-year follow-up. *Psychosomatic Medicine, 60*, 697-706.
- Scheier, M. F., Weintraub, J. K., & Carver, C. S. (1986). Coping with stress: Divergent strategies of optimists and pessimists. *Journal of Personality and Social Psychology, 51*, 1257-1264.

- Sher, K. J., & Levenson, R. W. (1982). Risk for alcoholism and individual differences in the stress-response-dampening effect of alcohol. *Journal of Abnormal Psychology, 91*, 350-367.
- Sinha, R. (2001). How does stress increase risk of drug abuse and relapse? *Psychopharmacology, 158*, 343–359.
- Sinha, R. (2008). Chronic stress, drug use, and vulnerability to addiction. *Annals of the New York Academy of Sciences, 1141*, 105–130.
- Sinha, R., Talih, M., Malison, R., Cooney, N., Anderson, G. M., & Kreek, M. J. (2003). Hypothalamic-pituitary-adrenal axis and sympatho-adreno-medullary responses during stress-induced and drug cue-induced cocaine craving states. *Psychopharmacology, 170*, 62–72.
- Sladen, B. J., & Mozdierz, G. J. (1985). An MMPI scale to predict premature termination from inpatient alcohol treatment. *Journal of Clinical Psychology, 41*, 855-862.
- Soleas, G. J., Diamandis, E. P., & Goldberg, D. M. (1997). Wine as a biological fluid: History, production and role in disease prevention. *Journal of Clinical and Laboratory Analysis, 11*, 287-313.
- Stefansson, R., & Hesse, M. (2008). Personality disorders in substance abusers: A comparison of patients treated in a prison unit and patients treated in inpatient treatment. *International Journal of Mental Health and Addiction, 6*, 402-406.
- Stocker, S. (1999). National Institute on Drug Abuse: Studies link stress and drug addiction. *NIDA Notes, 14*, n.p. Retrieved from http://archives.drugabuse.gov/NIDA_Notes/NNVol14N1/Stress.html

- Substance Abuse and Mental Health Services Administration (SAMSHA). (2006). *National Survey of Substance Abuse Treatment Services (N-SSATS): 2006. Data on substance abuse treatment facilities*. Retrieved from <http://www.dasis.samhsa.gov/06nssats/nssats2k6web.pdf>
- Substance Abuse and Mental Health Services Administration (SAMSHA). (2007). *Results from the 2006 National Survey on Drug Use and Health: National Findings*. Retrieved from <http://www.oas.samhsa.gov/nsduh/2k6nsduh/2k6results.pdf>
- Substance Abuse and Mental Health Services Administration (SAMSHA). (2010). *The N-SSATS Report: Clinical or therapeutic approaches used by substance abuse treatment facilities*. Retrieved from <http://oas.samhsa.gov/2k10/238/238ClinicalAp2k10.htm>
- Substance Abuse and Mental Health Services Administration (SAMSHA). (2011). *Treatment Episode Data Set (TEDS, 1999 – 2009). National admissions to substance abuse treatment services*. Retrieved from <http://www.dasis.samhsa.gov/teds09/teds2k9nweb.pdf>
- Sutfin, E. L., McCoy, T. P., Berg, C. J., Champion, H., Helme, D. W., O'Brien, M. C., & Wolfson, M. (2012). Tobacco use by college students: a comparison of daily and nondaily smokers. *American Journal of Health Behavior, 36*, 218-229.
- Teoh, H. Y., & Foo, S. L. (1997). Moderating effects of tolerance for ambiguity and risk-taking propensity on the role conflict-perceived performance relationship: Evidence from Singaporean entrepreneurs. *Journal of Business Venturing, 12*, 67-81.

- Wechsler, H., Lee, J., Kuo, M., Seibring, M., Nelson, T. F., & Lee, H. (2002). Trends in college binge drinking during a period of increased prevention efforts: Findings from 4 Harvard School of Public Health College Alcohol Study surveys: 1993-2001. *Journal of American College Health, 50*, 203-217.
- Weitzman, E. R., & Chen, Y. (2005). The co-occurrence of smoking and drinking among young adults in college: National survey results from the United States. *Drug and Alcohol Dependence, 80*, 377-386.
- Witiewitz, K., Desai, S. A., Steckler, G., Jackson, K. M. Bowen, S., Leigh, B. C., & Larimer, M. E. (2011, September 5). Concurrent drinking and smoking among college students: An event-level analysis. *Psychology of Addictive Behaviors*. Advanced online publication. doi: 10.1037/a0025363
- World Health Organization (2001). *The Alcohol Use Disorders Identification Test: Guidelines for use in primary care* (2nd ed.). Geneva.
- Zenasni, F., Besançon, M., & Lubart, T. (2008). Creativity and tolerance of ambiguity: An empirical study. *Journal of Creative Behavior, 42*, 61-73.

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