University of Nevada, Reno

Developing an Addiction Attitude and Belief Scale
For Use with Non-Treatment, Web-Based Populations

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Social Psychology

by

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Abstract

Using a series of three studies, this project met the objectives to develop an addiction attitudes survey for use in the general population, to test whether there is a universal construct called “addiction” that influences individual attitudes irrespective of the substance or behavior of abuse, and to complete a preliminary analysis of the moderators of addiction attitudes. The final 54-item survey has five subscales representing the five models of addiction theory: Moral Model, Nature Model, Psychological Model, Sociological Model, and Disease Model. These models differ in beliefs about abuse and addiction etiology, rationale for behavior, and prognosis for change. Development of the survey included an inductive, ground-up approach using focus group participants from the Las Vegas and Reno metropolitan areas. It also included a deductive, top-down approach with experts in the fields of survey development, attitudes, and addiction providing input in generating the survey item pool. University students and a sample of Nevada residents tested the draft survey. Further validation and reliability testing is indicated with this instrument, including confirmatory factor analysis with an additional sample. Outcomes for the research question indicated no support for a universal construct called “addiction.” Rather, individual attitudes varied based on the substance or behavior of abuse, and differed between abuse and addiction. Further research is indicated to test these findings. Analysis of the moderators of attitudes about addiction suggested that gender, age, education, religious beliefs, and addiction treatment history might be important predictors of attitudes. In addition, some evidence indicated ethnicity and race might predict attitudes about addiction. However, these latter findings were accepted cautiously due to the small sample size.
Dedication

This dissertation is dedicated to my family: to my loving, supportive, and patient husband, Dustin, for standing by me through the years of research, papers, and exams, frustrations and joys, and for telling me “not to worry, it will be alright.” I dedicate this to my loving daughter, Becca, who spend her earliest years helping me stay focused as we did our “homework” together on the sofa, giving me encouragement and telling me how proud she was that I was back in school. I dedicate this to my mother for her loving support, her humor, and her encouragement to “get this finished.” I dedicate this to my son, Todd, my daughter, Jennifer, and my grandson, Chase, for telling me never to give up on this dream, and assuring me that it was okay to move away. I dedicate this to my father who always believed that I could accomplish any task and jump any hurdle. Finally, I want to thank Cesar Chavez, Dolores Huerta and the United Farm Workers for their slogan: Si, Se Pueda! This has been my motto and mantra through the years of fatigue, doubt, and hope. Yes, it can be done!
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Chapter 1: Introduction

Between 2008 and 2009, the rate of admitted illicit drug use in the United States among individuals age 12 and over increased from 8% to 8.7% (i.e., 21.8 million) of the population (Substance Abuse and Mental Health Services Administration (SAMHSA), 2010, p. 1). In addition, 8.9% or 22.5 million people met diagnostic criteria for substance abuse or dependence or addiction (SAMHSA, 2010, p. 6), an increase of one-half million since 2002. In 2002, the White House’s Office of National Drug Control Policy (ONDCP) estimated the national economic burden of drug abuse and addiction at $180 billion (ONDCP, 2010). By 2005, the National Center on Addiction and Substance Abuse at Columbia University (2009) had increased the estimate to $467 billion, affecting America at the national, state and local levels. These monies include health care costs, drug interdiction, crime-related costs, prevention and treatment. Finally, in 2011 the Global Commission on Drug Policy declared, “The global war on drugs has failed, with devastating consequences for individuals and societies around the world” (p. 2). The Commission declared that characterization of substance abuse and dependence must change from that of a crime to a social health issue. Given the increase in abuse and dependency within the United States (and the world), and the devastating social and economic burden of addiction, research to increase an understanding of individual attitudes about substance abuse and addiction is relevant.

One difficulty in understanding attitudes about dependence/addiction lies within the construct itself. “Addiction is a socially defined construct” influenced by time, research and culture (West, 2001, pg. 5). As such, the definitions of this construct have varied over time, to include biological, moral, social, psychological, and sociological
components. However, each re-defining of the construct has improved our understanding, prevention, and treatment of the condition.

Individual attitudes about addiction also have changed over time, perhaps in concert with changes in the construct itself. For example, when Prohibition era individuals defined alcoholism as moral depravity public attitudes were without compassion; yet, when definitions changed to view alcoholism as a disease, public attitudes softened to include sympathy toward the afflicted. While defining addiction is important, it is and will continue to be just as important to understand individual attitudes about addiction. The reason for this importance is that attitudes influence behavior and outcome. Attitudes influence the acceptance of new addiction-related information, the willingness of treatment providers to utilize Evidence-Based Practices (EBP), and the development of effective prevention programming (Caplehorn, Irwig, & Saunders, 1996a; Caplehorn, Irwig, & Saunders, 1996b; Moyers & Miller, 1993). Attitudes also influence behavior toward those with substance use disorders (SUDs; Caplehorn, Irwig, & Saunders, 1996a; Luoma, Twohig, Waltz, Hayes, Roget, Padilla & Fisher, 2007; Peele, 1998), personal decisions regarding use (Trafimow, 1996), and may influence important jury and judicial decisions that affect the lives of those with SUDs (Gebelein, 2000; Lee & Rasinski, 2006; Sweitzer, 1997). Finally, attitudes about addiction underlie governmental and criminal justice policies regarding substance abuse, including the allocation of social resources toward treatment and prevention programs (Barba, 2007; Beyers, Toumbourou, Catalano, Arthur, & Hawkins, 2004; Fisher, 2006; ONDCP, 2007, 2011; Wodak, 2006).
Addiction as a Health Concern

According to the World Health Organization’s (WHO) World Mental Health Survey of 17 nations, the U.S. was found to have the highest levels of legal (alcohol and tobacco) and illegal (cannabis and cocaine) substance use (In Degenhardt, Chiu, Sampson, Kessler, Anthony, Angermeyer et al., 2008). Lifetime substance use by U.S. survey participants included: alcohol (91.6%), tobacco (73.4%), cannabis (42.4%), and cocaine (16.2%). In addition, lifetime risk of drug use as well as the probability of women using relative to men appears to be increasing in younger cohorts. For example, trends currently suggest the risk of initiation to drug use is lower in older cohorts, particularly with cannabis, but risk for alcohol and cannabis use remains high into later adulthood in younger cohorts. These trends may change as the baby boomers age into retirement, due to their greater exposure to substance use during their younger years.

The 2009 National Survey on Drug Use and Health (NSDUH) indicated that rates of past month (current) illicit substance use (e.g., for heroin, marijuana/hashish, hallucinogens, cocaine/crack, inhalants, and prescription medications used for non-medical reasons), remained relatively stable from 2002 to 2008 for adults age 12 and older, and then rose from 8.0% to 8.7% in 2009. In particular, NSDUH noted significant increases in use among adolescents age 16-17, young adults age 21 to 25, and older adults age 50-54. Accounting for these trends were increases in use of marijuana, ecstasy, methamphetamines, and prescription drugs. In addition, NSDUH found a significant increase in past month use for adults age 50 to 59 between 2002 (2.7%) and 2009 (6.2%; SAMHSA, 2010). Finally, an estimated 22 million individuals age 12 and older used
illicit substances during the month prior to the survey, an increase of almost 2 million individuals since 2007.

**The Influence of Addiction Attitudes**

As a corollary to the above use rates, in 2009 an estimated 24 million individuals age 12 and older met DSM-IV criteria for substance use disorder (SAMHSA, 2010, p. 84). Of these, less than 3 million received treatment. SAMHSA also reported that, in 2009, 20.9 million individuals age 12 and older met criteria for substance abuse treatment at a specialty clinic (SAMHSA, 2010). However, 19.8 million of these did not receive treatment at any specialty clinic, including hospitals (inpatient only), mental health centers or substance abuse rehabilitation facility (SAMHSA, 2010, p. 85). When questioned, 3.3% agreed that they needed but made no effort to seek treatment, and 94.9% did not believe they needed treatment. The above data suggests that not only is drug use a continuing issue in the U.S., but the beliefs and attitudes of many who use may act as a barrier to actually receiving treatment. Better awareness of public attitudes about addiction may provide a key to encouraging treatment by illuminating the specific attitudes that support treatment barriers.

In addition to possible influences on substance abuse treatment, beliefs about addiction may influence acceptance of new scientific information about addiction, behavior toward those with substance use disorders (SUDs), and personal decisions regarding use. For example, moralistic attitudes about addiction reduce tolerance and increase stigma toward those with SUDs (Caplehorn, Irwig, & Saunders, 1996a; Luoma, Twohig, Waltz, Hayes, Roget, Padilla & Fisher, 2007; Peele, 1998). Stigma may impede individual acknowledgment of substance abuse dependency, delay onset of treatment, and
influence the treatment an individual with an SUD ultimately receives (Caplehorn, Irwig, Saunders, 1996a; Caplehorn, Irwig, & Saunders, 1996b; Marsch, Stephens, Mudric, Strain, Bigelow, & Johnson, 2005; Moyers & Miller, 1993; Strain, Bigelow, Liebson, & Stitzer, 1999). Research also supports that attitudes about specific substances of abuse such as alcohol are significant predictors of intention to use, particularly intentions to “get a slight buzz” and “to get drunk” (Trafimow, 1996). In addition, Trafimow (1996) noted a strong positive correlation between intention and behavior (specifically future alcohol use).

Beliefs regarding the etiology of addiction and personal responsibility for use-related behaviors may influence judges and juries in cases where the defendant has a history of substance abuse or where illicit substances are part of the crime (Gibeaut, 1997; Sweitzer, 1997). For example, perceived public attitudes regarding alcohol abuse as a choice may underlie the decision of several states not to allow the use of voluntary intoxication as a defense for criminal behavior (Gibeaut, 1997; Sweitzer, 1997). Another study revealed a positive correlation between the attributions of personal blame for addiction and lack of morality in addicts with an endorsement of greater punishment for first time possession of cocaine (Lee & Rasinski, 2006).

The perception of addiction also plays a substantive role in the development of associated governmental and criminal policies, and allocation of resources for treatment and prevention. Attitudes about drug abuse explain the continued U.S. opposition to a shift from the abstinence-oriented “War on Drugs” model, (e.g., legislation that relies on a punitive response to substance abuse), to a harm reduction model, (e.g., legislation that relies on reduction of individual and societal harm rather than expectations of abstinence
through programs such as needle exchange, methadone treatment, and drugs-by-prescription). During the 2005 United Nations’ Commission of Narcotic Drugs, the U.S., Japan, and Russia blocked 17 other nations from allowing text or discussion regarding harm reduction, even though multiple nations endorsed harm reduction policies (Beyers, Toumbourou, Catalano, Arthur, & Hawkins, 2004; Wodak, 2006). In addition, Europe views harm reduction as “part of the mainstream policy response to drug use in Europe” (Rhodes & Hedrich, 2010, pg. 13). Abstinence-oriented cultures such as the U.S. are more likely to demonize psychoactive substances and stress total abstinence over moderate use in the belief that such will curb substance use. Ironically, a comparison of U.S. and the Netherlands, indicated that the U.S. is higher in cumulative lifetime use of tobacco (74% versus 58%), cannabis (42% versus 19.8%), and cocaine (16% versus 1.9%), even though the Netherlands endorses a harms reduction model (Degenhardt, Chiu, Sampson et al., 2008). Commensurate with the “War on Drugs” (Barba, 2007), governmental policies and monies were more likely to be directed toward law enforcement, prohibition, and sanctions for substance use than for treatment or harm minimization. Thus, U.S. policy continues to reflect abstinence-oriented cultural attitudes rather than the harm-reduction attitudes endorsed by Canada, Australia, and 15 other countries around the globe (Beyers et al, 2004; Wodak, 2006).

In the 1980’s, the Office of the National Drug Policy implemented Drug Court programs to provide treatment rather than incarceration for first-time offenders with substance use disorders (SUDs; Goldkamp, 1995). These programs were an effort to stem the nation’s escalating drug-related problems and an acknowledgment that traditional punishment-based judicial efforts were not working. Contrary to this acknowledgment,
federal allocations of money to drug-related law enforcement programs continue to outweigh the allocations for treatment and prevention (Fisher, 2006; ONDCP, 2007, 2011). In 2006, the government allocated 27% of the Federal Drug Control budget toward domestic law enforcement and 32.4% toward interdiction and international drug policy enforcement (totaling 59.4%), while allocating only 26.2% to treatment and only 12.6% to prevention (ONDCP, 2007). Although total amounts were substantially increased in the proposed fiscal year 2012 strategy, the ratios showed a similar pattern with 36.2% allocated toward domestic law enforcement and 23.1% toward interdiction, and international enforcement of drug policies (totaling 59.3%), 34.3% allocated for treatment, and only 6.4% allocated for prevention (ONDCP, 2011).

Finally, addiction attitudes can influence substance use laws developed and enacted at the State level. Seven states have passed laws to develop an online public registry of methamphetamine-offenders, similar to the sex offender registry (Online registries of drug offenders, 2006). This program could serve as a seriously negative influence on the lives of recovering addicts. The voting public also decides whether to legalize substances such as marijuana or criminalize the use of substances such as tobacco in public places. In 2000 for example, California voters passed Proposition 36, allowing adults arrested and convicted on nonviolent drug-related crimes to enter treatment rather than serve probation without treatment or incarceration (Hser, Teruya, Brown, Huang, Evans, & Anglin, 2007).
The Problem: Inadequate Addiction Attitude Instruments

One key to understanding public attitudes toward addiction is the ability to discover these attitudes in a valid and reliable manner, perhaps via a standardized instrument designed for this purpose. However, a review of current addiction attitude assessment tools points to four significant instrument-based issues that limit such an understanding and suggest the need for development of a new addiction attitude measure. First, although many researchers have developed addiction attitude assessments in the last 20 years (Anderson & Clement, 1987; Chappel & Veach, 1985; Furnham & Thomson, 1996; Humphreys, Greenbaum, Noke, & Finney, 1996; Luke, Ribisl, Walton, & Davidson, 2002; Moyers & Miller, 1993; Schaler, 1995), scale item wording and the number of subscale items are inconsistent across the instruments. Such inconsistency makes it difficult to determine if the items are measuring the same attitudinal constructs and brings into question an issue of generalizability. In addition, wording inconsistency makes it difficult to aggregate findings across samples for a better picture of public attitudes about addiction. For example, Luke et al.’s (2002) Chronic Disease Subscale on the Addiction Belief Inventory (ABI) includes four items that reference “drinking or drug problem” and “alcoholism/drug abuse,” while Moyers and Miller’s (1993) Disease Model Beliefs Subscale on the Understanding of Alcoholism Scale (UAS) contains 22 items that reference only alcohol. A shortened version of the UAS scale, the Short Understanding of Substance Abuse Scale (SUSS) (Humphreys et al, 1996) has seven items in the Disease Subscale and includes wording such as “drugs,” “addict,” and “drug addict.” In another example, the ABI item, “To be healed addicted persons have to stop using all substances” may not assess the same attitudinal construct as a similar item in the UAS, “There are
only two possibilities for an alcoholic: permanent abstinence or death” or the SUSS item, “There are only two possibilities for an alcoholic or drug addict: permanent abstinence or death.” Furnham and Thomson (1996) provide yet another example. Their *Biological Subscale* includes five items that measure attitudes about heroin addiction. An item from their instrument, “They have inherited the addiction from their mother who took heroin when she was pregnant” may not tap onto a similar ABI item in the *Genetic Basis Subscale*, “Alcoholism/drug addiction is inherited.”

Second, many of the instruments reviewed focused on selected theoretical models to the exclusion of others (Cirakoglu & Isin, 2005; Moyers & Miller, 1993; Schaler, 1995). For example, principal component analysis of the *Causes of Drug Abuse Scale* (CADAS; Cirakoglu & Isin, 2005) revealed four latent components supporting psychological, sociological, and moral theories of addiction. However, no items supported the disease or nature models of addiction.

Third, existing instruments assessed attitudes about addiction within addiction client and provider populations. Use of these instruments with non-treatment-based populations may be questionable simply because of language familiarity issues. For example, those in treatment or providing treatment may understand certain terminology (e.g., triggers, craving) differently than those without exposure to the same social culture. These instruments also may not adequately capture the beliefs and attitudes of populations other than those upon whom the tests were normed, raising concern about external validity when used to assess public attitudes.

Fourth, many instruments focus on attitudes toward specific substances of abuse (Crawford & Heather, 1987; Cunningham, Blomqvist, & Cordingly, 2007; Cunningham,
Sobell, Freedman, & Sobell, 1994; Cunningham, Sobell, & Sobell, 1996; Furnham & Thomson, 1996), or dichotomize addiction into alcoholism and drug addiction (Luke, Ribisl, Walton, & Davidson, 2002). No instrument examines addiction as the universal construct presented in emerging addiction models (Mosher & Akin, 2007); begging the question of whether such a construct even exists. Can addiction be operationalized as a prototype, independent of specific addictive substances and/or behaviors, defined by the elements of “progression, preoccupation, perceived loss of control, and…persistence [or negative long-term consequences” (Walters, 1999, p. 10)? Alternatively, do attitudes about addiction vary with the addictive substance/behavior, perhaps due to other factors such as negative personal and economic cost?

**Summary and Focus of Research**

In summary, the increase in abuse and dependency within the United States (and the world), and the devastating social and economic burden of addiction, has made relevant the need for research to increase an understanding of individual attitudes about substance abuse and addiction. However, although there are numerous instruments to elucidate attitudes about addiction most examine the attitudes of individuals with addiction disorders or treatment providers, physicians and staff in direct client care. Use of these instruments with the public may raise questions of external validity.

Several existing instruments focus on attitudes about specific substances of abuse rather than a generalized concept of addiction that mirrors emerging theoretical models. In addition, current instruments focus on specific theoretical models of addiction to the exclusion of others. While these instruments offer valuable information, they may fail to
adequately assess public attitudes about addiction and fail to help us fully understand individual perceptions about addiction, specifically as a universal construct.

The purpose of this study was to improve the understanding of public attitudes about addiction through development and validation of a new addiction attitude instrument designed for use with the public. Current theoretical models of addiction provided the item organizational structure (see Table 1/Introductory Model: Boxes I & II), while Social Influence and Learning Theory provided theoretical support for the instrument. In addition, the study examined whether participant attitudes are moderated by variables such as age, gender, ethnicity/race, education, marital status, religiosity and religious affiliation, political affiliation, and experience with substance use, abuse and addiction (see Table 1/Introductory Model: Box III). Finally, the study examined support for an underlying construct called addiction (see Table 1/Introductory Model: Boxes IV & IVa). Subsequent analysis with the scale will center on cross validation with multiple samples.
Table 1
Introductory Model

Box IV
Underlying Construct: Addiction
“The essential feature of dependence (addiction) is a cluster of cognitive, behavioral, and physiological symptoms and consequences indicating that the individual continues the behavior despite significant behavior-related problems” (adapted from the DSM-IV, pg. 176)

Box I
Theoretical Models of Addiction

Moral Model: Addiction is morally wrong and a personal weakness. Addicts are “bad”

Disease/Genetic Model: People can be genetically predisposed to addiction. Addiction is a neurobiological condition caused by changes in the brain at the neuronal level that influence motivation, reward, and relapse.

Psychological: Addiction is a maladaptive coping mechanism

Sociological: Addiction is a learned behavior

Nature: Addiction is at the extreme end of a range of normal behavior, and the quest for feeling intoxicated is normal
Chapter 2: Literature Review

Substance Use, Abuse & Addiction

This section includes definitions for terms such as addiction and attitudes, followed by a discussion of the complexity found in understanding attitudes about addiction. Addiction may be thought of as the extreme behavior on a continuum of maladaptive behaviors that ranges from use to abuse, and then to dependence. Authors of the DSM-IV replaced the term addiction with substance dependence due to fears that addiction is a pejorative and likely to increase stigma. However, “the American Society of Addiction Medicine, the American Association of Addiction Psychiatrists, the American Journal on Addictions” and the journal Addiction continue to use the term (O’Brien, Volkow & Li, 2006, p. 765). Therefore, this study utilized the term addiction, as it may be more familiar to a non-academic, public population.

In 2000, the American Psychiatric Association classified a range of behaviors under the general heading of Substance-Related Disorders (DSM-IV; Diagnostic and Statistical Manual of Mental Disorders, 4th ed., Text Revision) with Substance Use Disorders (SUDs) as a subcategory. Although not included as a specific category, substance use underlay the listed disorders with use defined as the ingestion or consumption of a psychoactive substance that alters the functioning of the brain. Substance Abuse, the less clinically serious disorder, is “a maladaptive pattern of substance use manifested by recurrent and significant adverse consequences related to the repeated use of substances” (p. 198). Substance Dependence, at the extreme end of the use continuum, is defined as “a cluster of cognitive, behavioral, and physiological symptoms indicating that the individual continues use of the substance despite significant
substance-related problems...[and] that usually results in tolerance, withdrawal, and compulsive drug-taking behavior” (p. 192). Although craving is not officially listed as a criterion in this definition, authors of the DSM IV-TR acknowledge that a “strong subjective drive to use the substance” (aka craving) occurs in most cases of substance dependence (p. 192).

In addition to characterizing addiction as the pathological use of substances, recent research suggested that dysfunctional behaviors might include behavioral or process addictions (Goodman, 2001; Mick & Hollander, 2006; Schmitz, 2005; Young, 1996). The DSM-IV (2000) categorized behavioral disorders such as kleptomania, pyromania, pathological gambling, trichotillomania, and intermittent explosive disorders under Impulse Disorders-Not Elsewhere Classified (p. 609). Symptoms of these disorders, “failure to resist an impulse, drive, or temptation to perform an act that is harmful to the person or to others” and “increasing sense of tension or arousal before committing the act” (DSM-IV, 2000, p. 609), are similar to the clinical features of substance dependence in terms of “salience, withdrawal symptoms, tolerance, conflicts, relapse, and mood modifications” (Pallanti, 2006, ¶ 1). In addition to similar clinical features, research has determined that the neurobiological and genetic substrates of certain behavioral disorders correspond to those of substance addiction (Grant, Brewer, & Potenza, 2006; Lobo & Kennedy, 2006). For example, Volkow and Wise (2005) noted common genetic, neurobiological, developmental, and environmental factors between obesity and addiction. Grant, Kim, Hollander, and Potenza (2008) reported similarities between pathological gambling and addiction to psychoactive substances, and Warthan, Uchida, and Wagner (2005) suggested that obsessive tanning is similar to substance-
related dependency. Defining addiction solely in terms of chemical substances fails to
capture this complexity. Therefore, in this study all references to “addiction” included the
behavioral/process- as well as substance-based addictions, acknowledging their clinical,
genetic, and neurobiological similarities.

In addition to the DSM IV, definitions of addiction may vary based on whether viewed from a psychological, sociological, social psychological or biological viewpoint. Peele (2000) and Peele and Brodsky (1991) defined addiction as a self-defeating, coping mechanism in response to an individual’s environment, and as a socially constructed concept, mediated by factors such as history, culture, situation, beliefs, social learning, and individual values. Schaler (2000) defined addiction as a personal, ethical choice derived from individual values, while Bickel and Potenza (2006) asserted that addiction is an interaction between social, cognitive and neurobiological processes, a “self-organizing, complex disorder that emerges from the interaction of evolutionary old behavioral processes and their associated brain regions” (p. 9). Volkow (2005) and Leshner (1997) described addiction from a medical/biological standpoint; characterized by genetic inheritability, chronic progression, and neuronal changes in the brain following substance use or addictive behaviors.

McLellan (2002) offered that addiction meets the same medical criteria designated for other chronic disorders such as hypertension, diabetes, and asthma. As with chronic illnesses, the underlying disorder remains even when physicians treat substance use disorders with medication to control symptoms. For example, treatment with hypertension medication may reduce high blood pressure, but the patient still has hypertension. Likewise, treatment with buprenorphine may reduce withdrawal and
craving in opioid addiction, but the individual is not “cured” of the addiction. Individuals with chronic illnesses, as well as addiction, may fail to adhere to behavioral changes (e.g., lose weight, reduce stress, avoid cue craving situations) or medication regimens, and relapse is common (40-60% when relapse is defined as re-emergence of symptoms). Koob and Le Moal (2006) summarized medical perceptions of addiction as “a chronic, relapsing disorder characterized by 1) compulsion to seek and take the drug, 2) loss of control in limiting intake, and 3) emergence of a negative emotional state…when access to the drug is prevented” (Koob & Le Moal, 1997, cited in Koob & Le Moal, 2006, p. 1).

Finally, one study compared the definitions of addiction by inmates in drug education classes to those of experts in the field of addiction research and treatment (Walters & Gilbert, 2000). A list of 18 definitions resulted with significant between group differences, and neither group’s definition supported all four elements of addiction found in Walters’ earlier work: progression of the behavior, preoccupation with the behavior, perceived diminished control, and persistence behavior in spite of increasingly negative consequences (1999, in Walters & Gilbert, 2000, pg. 212). Experts were more likely to endorse physical dependence as a primary criterion in defining addiction, while the clients were more likely to endorse diminished control. The authors cited the lack of consensus between groups as an indicator of both the complexity of addiction and the difficulty of operationalizing the concept for future scientific study. These multiple and sometimes conflicting definitions suggest that unraveling individual attitudes about addiction is a complicated process. As stated by William G. Campbell, the dilemma is that “no model explains the addictive behaviours in a rational, scientific manner or
provides any explanation that defines a common cause for the various behaviors that are called ‘addictive’ (2003, p. 670).

**Attitudes**

In addition to being able to differentiate between substance abuse and addiction, it is important to understand the concept of attitudes. Included in this next section is a definition of attitudes, followed by a brief discussion of the importance of understanding attitudes about addiction. Eagly and Chaiken (1993) defined attitudes as “a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor” (“The nature of attitudes,” p. 1). Attitudes are psychological constructs that motivate movement toward or away from an attitudinal object, and are observable through overt cognitive, affective or behavioral responses. Beliefs, thoughts and ideas about the attitudinal object make up the cognitive component of attitudes, while the affective component includes feelings and emotions experienced in association with the attitudinal object. The behavioral (i.e., conative) component includes actions and reactions, as well as intentions toward behavior that are associated with the attitudinal object. Using this definition, attitudes about addiction may include beliefs, feelings, and behaviors toward the use of addictive substances/behavior as well as toward those who are substance/behaviorally dependent.

The importance of understanding attitudes about addiction lies in the association between these attitudes and subsequent behavior. As indicated previously, attitudes toward addiction influence the acceptance and use of addiction treatment and prevention information (Caplehorn, Irwig, & Saunders, 1996a; Caplehorn, Irwig, & Saunders, 1996b; Moyers & Miller, 1993). In addition, these attitudes influence judicial decisions
in crimes where substance abuse or dependency is a factor (Gebelein, 2000). Addiction attitudes also underlie the formation of governmental (Fisher, 2006) and criminal justice substance abuse policies (Hser, Teruya, Brown, Huang, Evans, & Anglin, 2007), including the allocation of social and public resources (Schomerus, Matschinger, & Angermeyer, 2006).

Addiction prevention research focuses on the development/formation as well as change of attitudes toward addictive substances and behaviors. For example, anti-drug prevention campaigns in the 1980’s used exposure tactics (repeated commercials such as “This is your brain. This is your brain on drugs.”), and other techniques (e.g., classical conditioning, operant conditioning) to influence attitude formation in adolescents. The purpose of such prevention campaigns is to increase psychosocial and behavioral protective factors (e.g., peer modeling, pro-social activities) that discouraged anti-normative behaviors and to reduce risk factors that encouraged anti-normative behaviors (e.g., drinking or unprotected sex) (Costa, Jessor, & Turbin, 2007; Eagly & Chaiken, 1993; Moos, 2007).

Addiction treatment research also noted an association between existing attitudes, motivation, and behavior. Therapeutic models such as Motivational Interviewing and Motivational Enhancement Therapy address ambivalent attitudes toward dependency in order to increase motivation toward recovery (Miller & Rollnick, 2004; Moos, 2007). Other models, such as Cognitive Behavioral Therapy, address changing beliefs and specific behaviors to increase recovery. Thus, the focus of addiction treatment is that of helping to influence attitude and behavior change through cognitive, behavioral, and motivational processes.
Studies have examined the attitudes of those who use psychoactive substances including client attributions about smoking and nicotine addiction (Eiser, Sutton & Wober, 1977; Spigner, Shigaki, & Tu, 2005), continued drug use (Newham & Davies, 2007), and personal and other’s relapse (Seneviratne & Saunders, 2000). Akers & Lee (1999) examined the association between adolescent attitudes toward marijuana use, social bonding and social learning variables and the frequency of marijuana use. These authors found that changes in use frequency between 7th and 12th grade were significantly associated with social learning variables including attitudes toward marijuana, reinforcement for use, and peer associations related to use. Verkooijen, deVries, & Nielsen (2007) also found a relationship between adolescents’ social identity, attitudes about substance use and use of tobacco, alcohol, and marijuana.

Researchers have examined specific addiction attitudes within college student samples (Cirakoglu & Isin, 2005; Garlitz, 2007; Patchell, 2005; Prine, 1997), the public (Crawford & Heather, 1987; Cunningham, Blomqvist, & Cordingley, 2007; Cunningham, Sobell, Freedman, & Sobell, 1994; Furnham & Thomson, 1996), and treatment providers (Caplehorn, Irwig, & Saunders, 1996a; Caplehorn, Irwig, & Saunders, 1996b; Moyers & Miller, 1993). However, as stated in the Introduction, the specificity in these studies (i.e., research comparing the disease and moral models of addiction; studies limited to alcohol or to specific illicit drugs) has limited their usefulness in understanding more general public attitudes about addiction.

**Barriers to Understanding Attitudes about Addiction**

Several barriers exist to understanding attitudes about addiction. First, one cannot be sure that reported beliefs about addiction actually reflect beliefs about
dependence/addiction rather than use or abuse. Reported attitudes about addiction may subconsciously reflect beliefs about use or abuse, instead of or in addition to beliefs about dependence/addiction. For example, when examining attitudes about addiction to alcohol, it may be difficult to determine whether the individual’s response reflects attitudes about alcohol dependence or alcohol abuse. Historically, use has been considered relatively benign (albeit when the substance or behavior is legal), while abuse and addiction have been linked with stigma, criminal activity, and individual and societal threat (Luoma, Twohig, Waltz, Hayes, Roget, Padilla, & Fisher, 2007; Zinberg, 1984). Individuals accept alcohol use in a variety of social settings, but alcohol abuse is less socially acceptable, and alcoholism (i.e. alcohol dependence) is almost universally condemned.

Second, understanding attitudes about addiction may be difficult because public sentiment may differ based upon the legality of the behavior or substance. Attitudes about use of illegal substances (e.g., heroin, cocaine, cocaine, cannabis) and behaviors (e.g., sexual addiction, pyromania) may be more negative than attitudes toward use of legal substances (e.g., alcohol and nicotine) and behaviors (e.g., gambling) (Cunningham, Sobell, Freedman, & Sobell, 1994). For example, alcohol and nicotine use is a socially accepted activity in a variety of situations such as athletic competitions, parties, and weddings, while methamphetamine or cocaine use is not acceptable in most social settings.

In summary, the definitions for addiction are varied and complex, covering a wide variety of substances and behaviors which may be legal or illegal. Adding to this complexity is the difficulty ascertaining whether reported attitudes encompass only
addiction or intertwine with beliefs about use and abuse. As a reflection of these difficulties, measures to assess attitudes about addiction are almost as varied as the concept itself, making it difficult to compare attitudes across populations, substances or behaviors.

History of U.S. Attitudes toward Substance Use, Abuse, and Dependence

This next section expands the discussion of attitudes about addiction by reviewing the U.S. history of attitudes toward substance use, abuse, and addiction over the past few centuries. Per this literature, addiction researchers categorize attitudes into historical epochs characterized by changes in use behaviors, social mores surrounding use, and beliefs that underlie attitudes toward the use and abuse of the substances (Musto & Korsmeyer, 2002; White, Boyle, & Loveland, 2002; White & Savage, 2005; Zinberg, 1984). Although these attitudes may differ depending upon the drug of use (Cunningham, Sobell, Freedman, & Sobell, 1994), one could generalize across all psychoactive substances the evolution of substance use attitudes from acceptance to rejection. For example, Musto (1989) described the evolution of attitudes toward cocaine as a “paradigm of our pattern of response to a number of powerful chemicals” (p. 3). Prior to the early 1900s, society believed cocaine to be a harmless, non-addicting, healthy substance. Between 1900 and 1914, however, attitudes toward cocaine changed until the U.S. government curtailed availability on the public market and use became a criminal offense.

The evolution of attitudes toward alcohol is another example of a paradigm shift representing the general change in attitudes towards drugs of abuse. From 1600 and 1770, alcohol consumption was a part of daily life, consumed in taverns as part of meals, used
during celebrations and even as medicine during pregnancy and nursing. Rituals and sanctions accompanied public expectations for moderate use, educated the young in appropriate alcohol-related behavior, and reinforced religiously based social norms of moderation. Although U.S. attitudes toward alcohol use were generally positive during this period, prohibitions and social sanctions existed against drunkenness. However, as will be discussed, attitudes about alcohol use deteriorated significantly during the early part of the 20th century, until some individuals viewed any use as abuse and addiction. As with cocaine, laws curtailed drug availability and legally controlled and sanctioned use.

Two final examples of the paradigm shift in attitudes toward psychoactive substances occurred with marijuana and opium. The history of use for both drugs spans centuries. Archeological sites showed evidence of marijuana use from as early as 6,000 B.C. (Mosher & Akins, 2007). Similarly, opium cultivation existed at least as early as 3400 B.C. in Mesopotamia (Booth, 1996). Attitudes toward use of these substances were positive for hundreds of years, with use controlled through rituals and sanctions. However, after the early 1900s, attitudes shifted significantly, until governments criminalized all use.

Technology and scientific advances in the last 100 years may explain the shift in attitudes toward substance use and toward those with substance use disorders (Musto, 1999). Advances in technology moved drug use from the realm of occasional, controlled, and ritualistic use, into a media-driven use with general availability and public consumption (Musto, 1989, 1995). Technology enabled increased potency, and simplified manufacture of substances to improve material gain. These increases in availability and potency correlated with increased incidence of use and of addiction (Weil, 1972), making
the consequences of substance abuse more apparent to the public. Advances in science also elucidated the biological and neurological effects of psychoactive substances on the body and the brain.

The following sections examine U.S. attitudes toward substance abuse and addiction through historical periods spanning approximately 150 years. Taking such a long view is helpful in understanding the roles played by war, westward and international territorial expansion, cultural revolutions, and science in the development of public attitudes toward the use and abuse of psychoactive substances. The historical periods include 1) the era of substance abuse as a moral issue from mid-1800s to mid-1900s; 2) the era of experimentation, changing values, and harsh governmental response from 1940s to 1960s; and, 3) the modern era of ambivalence.

**Addiction as a Moral Issue.**

Tolerant public attitudes toward drug use and specifically alcohol consumption declined between 1770s and the mid-1800s, following the Revolutionary War, the Industrial Revolution, and the subsequent expansion of families into the American frontier (Zinberg, 1984). Possibly, because of these societal events and the concurrent separation of families, alcohol use moved outside the controlled family purview. Males were more likely to drink (and drink to excess) in the local taverns, while women were more likely to remain in their homes. The association between alcohol consumption and eating declined as alcohol use no longer was restricted primarily to celebrations or family meals. Alcohol-related violence escalated and beliefs grew that alcohol consumption could not be controlled (Zinberg, 1984). Medical labels such as *dipsomania, chronic alcoholism, inebriism, and inebriety* reflected the addition of ‘alcoholism as a disease’ to
the public conceptualization of ‘alcoholism as a vice resulting from moral depravity’ (White et al., 2002, pg. 108). Concurrent with these changing attitudes about alcohol use, American medical journals expanded the disease concept to include other psychoactive substances such as narcotics, chloral, cocaine, and ether (White et al., 108).

Between mid-1800 and the early 1900s, U.S. and international attitudes toward substance use became more negative. American political response to the primarily female-led Temperance Movement included the development of laws to control the manufacture, importation, and use of various psychoactive substances, including alcohol, opium and its derivatives, and cocaine (Musto & Korsmeyer, 2002; “Teaching with documents,” 2008). In 1905, Congress banned Filipinos from non-medical use of opium in the newly acquired Philippine islands territory, but allowed non-Filipino island residents three years to stop smoking opium. In 1906, Congress created the *Pure Food and Drug Act* in response to fears about addictive ingredients in food and unease about food processing. In 1909, the U.S. and 13 other nations convened the Shanghai Opium Commission in an effort to curb China’s opium trade and the movement of opium into the United States. The Hague Opium Convention followed in 1912, when the U.S. and 11 other nations agreed to control manufacture and export of opium, opium derivatives, and cocaine (Musto & Korsmeyer, 2002). In 1914, the U.S. passed the Harrison Narcotic Act, providing federal control over U.S. manufacturing, distribution, and consumption of opium, opium derivatives, and cocaine. This law effectively curtailed physician treatment of opium addiction with prescribed opioids and banned the use of opioids in general medicine. In addition, the law placed drug-related federal policies under the rubric of
“police matters” to be handled by various federal bureaus designed specifically to curb and sanction substance use (Musto & Korsmeyer, 2002, pg. x).

Shortly after implementation of the Harrison Narcotic Act, the U.S. entered the era of Prohibition characterized by a declining popularity of the disease model of addiction, an increasing public view of substance use as a moral issue, and greater legal efforts to control manufacture and use of psychoactive substances (Zinberg, 1984). Treatment facilities closed; punishment and incarceration became the more frequent response to use (Musto & Korsmeyer, 2002; White et al, 2002). In 1914, the Volstead Act stated that “no person shall manufacture, sell, barter, transport, import, export, deliver, furnish, or possess an intoxicating liquor except as authorized by this act” (Zinberg, 1984). In 1924, production of heroin became illegal, and in 1937, the federal government criminalized possession and use of marijuana (Musto & Korsmeyer, 2002). Although there was a large drop in alcohol use and alcohol-related problems during Prohibition, federal efforts failed due to individual backlash and political uproar about the restrictions. In defeat, the U.S. government repealed the Prohibition amendment in 1933, and changed control tactics to include taxation of legal substances of use.

According to Zinberg (1984), the repeal of Prohibition left U.S. citizens with the existence of substance use without the moderating rituals and sanctions of previous years. Such rituals and sanctions defined the differences between acceptable moderate use and condemnable compulsive use. Rituals and sanctions also educated new users about safe social contexts conducive to positive drug experiences, provided essential knowledge and precautions regarding drug effects, and differentiated between non-drug related obligations and recreational use of the drug (pg. 17-18).
Experimentation, Changing Values, and Governmental Response.

During the years after Prohibition, vast differences developed between public, treatment professionals, and governmental attitudes toward substance use, possession or sale. Public attitudes from the 1940s to the 1960s ranged from fear to disgust and pity. Perceptions of cocaine, Sigmund Freud’s lauded wonder drug, changed with use of the drug either ignored or feared and believed to incite violence in African American males. Treatment professionals and the public, as noted by Daniel Anderson, founder of the Minnesota Model of Treatment, were equally negative about those with alcohol use disorders, “Everyone looked down on them, including the community, hospital staff, and even our mentally ill patients. The inebriates had a lower status than the schizophrenics and the manic depressives, or even the kleptomaniacs or pedophiles” (“Daniel J. Anderson,” 2008, ¶ 6). Physicians were reluctant to prescribe opiates to relieve pain for fear of inducing addiction, and substance use researchers appeared to equate any level of use with abuse (Zinberg, 1984). Increasingly harsh federal laws toward possession or sale of illegal substances mirrored negative public attitudes by reflecting the belief that coercive action was the only way to curb use. By 1951, judges assessed two-year mandatory sentences for first-time offenders. By 1956, the U.S. government defined marijuana as a narcotic and possession could result in a life sentence in prison, while individuals trafficking in heroin to minors could receive the death penalty (Fisher, 2006).

In the 1960s, attitudes toward substance use and addiction began to change. Programs such as the Minnesota Model and the works of addiction researchers such as E. M. Jellinek (1960) represented a social reform movement to humanize addiction treatment and promote alcoholism as a chronic, progressive disease rather than a moral
failure (“Daniel J. Anderson,” 2008; White et al, 2002). Jellinek’s (1960) hypothesis that alcoholism is a multi-faceted disease, and that prevalence rates of alcoholic types vary by nation, prompted further research into alcoholism and addiction. For example, Jellinek asserted that Alpha alcoholics used alcohol to relieve emotional or physical pain and suffered only from psychological dependency. Beta alcoholics suffered from the physical damage of alcohol (cirrhosis of the liver), but not from psychological or physical dependence. Gamma alcoholics experienced tolerance, physical dependence and loss of control, while Delta alcoholics suffered from an inability to abstain from drinking, along with tolerance and physical dependence. Finally, Epsilon alcoholics experienced periodic alcoholism such as binge drinking. Jellinek also proposed that types of alcoholism differ by countries. For example, the US is more likely to have Gamma alcoholics, while France has more Delta alcoholics.

Sociologist Howard S. Becker’s assertion that social learning influences individual response to drug use opened the door for further change as researchers examined the context of substance use (Zinberg, 1984). Finally, the American Medical Association’s official classification of alcoholism as a disease in 1967 prompted scientific and medical research into addiction (Boyarsky, Dilts, Frances, et al, 2002). As a corollary to this classification, correctional programs began to focus on rehabilitation rather than punishment.

During the same period of the 1960s, negative public attitudes about the Cold War and Vietnam precipitated the birth of the hippie counter culture and drug revolution with increases in drug experimentation and popularity (Zinberg, 1984). Likewise, in Vietnam military soldiers responded to the horrors and long hours of war by using heroin and
stimulants. Contrary to these changes in public opinion, the U.S. government reacted to the increased drug use with extensive, fear-provoking media coverage about drug-induced psychosis and addiction, warnings that heroin addiction was rising, and allegations of an association between drug use, rising crime, and violence. Although attitudes toward addiction continued to be primarily negative, public attitudes toward drug use no longer were consistent throughout the American population.

**An Era of Ambivalence.**

The final era of addiction attitude history ranges from the 1970s to present day. Timeframes for this era include America’s War on Drugs, the upswing in prescription drug use, the popularization of the term “addiction” to encompass multiple non-drug related behaviors, the changing attitudes toward nicotine, the influence of science on attitudes about addiction, and the increased substance use among the older population (SAMHSA, 2008). The 1970s may be remembered by President Nixon’s declaration of the “War on Drugs” (Fisher, 2006), concerns about the effectiveness of prison rehabilitation programs (Gebelein, 2000), assertions regarding addiction’s chronicity (White et al, 2002), and a willingness among the scientific research community to consider similarities between legal (alcohol, tobacco, and caffeine) and illegal drugs (Zinberg, 1984). Public awareness of the harm potential in illegal drugs began to generalize to legal drugs, even as use of illegal drugs continued to rise.

Between the 1970s and the 1980s, recreational drug use continued to rise as public tolerance of use fell (Fisher, 2006; Musto & Korsmeyer, 2002). Nancy Reagan’s “Just Say No” campaign was an indication of changing public attitudes toward acceptance of drug use, including the designation of addiction as a personal choice
involving individual responsibility. The government continued to funnel billions of dollars into supply reduction overseas, and demand reduction within the U.S., even though descriptions of those efforts began to suggest acknowledgement of the government’s failure. For example, statements about governmental efforts changed from drug eradication efforts to minimizing the drug threat (Fisher, 2006; Musto & Korsmeyer, 2002). The public and the government believed prison rehabilitations programs to be a failure as crime and recidivism rates continued to increase. Gebelein (2000) asserted that the failure of the prison programs stemmed from multiple sources, including the general lack of knowledge about the etiology of drug use or criminal behavior; the sociological climate (e.g., racial issues, Vietnam War, economic slowdowns and recession); indeterminate sentencing that resulted in disparate and unfair sentences for the same offense; and, the inability of the prisons to handle the overwhelming numbers of new offenders. In the medical arena, the acute care model of addiction treatment dominated, even though federal entities began to define addiction as a chronic, progressive disease (White et al, 2002). Finally, the high levels of relapse coupled with increased awareness of HIV and AIDS led to rising public pessimism about recovery.

In the 1990s, the goal of corrections changed from rehabilitation back to punishment, retribution, and incapacitation mirroring negative public attitudes about drug-related crime and a sense of hopelessness about recovery. Several states abolished their Parole boards and California’s “Three Strikes” law characterized public and political philosophy toward addiction and drug-related crime (Gebelein, 2000). In some states such as Texas, the legislature pulled state funding for prison drug treatment as evaluation of programming versus later recidivism showed minimal effectiveness. At the
same time, alternative and rehabilitative sentencing programs such as the Drug Court movement were increasing in popularity as a means of reducing crime through treatment of underlying addiction disorders.

Between the 1990s and 2011, another extremely important change was occurring that would influence public beliefs about addiction. Specifically, the rise in the science and neuroscience of addiction increased awareness about the genetics and heritability of addiction, the drug-induced neurobiological changes in the brain, and the biological and neurobiological damage caused by psychoactive substances and addictive behaviors. This information affirmed the chronicity of addiction and increased understanding of addiction as a disease. In response, public acceptance of legal drugs such as nicotine and alcohol declined in many states with new, more prohibitive laws. Federal allocations of money toward reduction of supply and demand continued to increase, even when lacking evidence of program success (Fisher, 2006), and long-term treatment for drug addiction became more the norm than the exception. However, in spite of these changes, drug use in adults has not significantly declined since 2002 and use within certain populations has increased (SAMHSA, 2008, 2009, & 2010).

The Influence of History on the Models of Addiction

Concurrent with the above history is the development of various models of addiction. This section discusses these models while placing the models within their historical context -- as they might have risen within U.S. history. Addiction models reflect attitudes about addiction, including beliefs regarding etiological factors, the influence of relevant moderators, the rationale behind and personal responsibility for continued use, the benefits of treatment, and prognosis for change. Mosher and Akins
(2007) categorized addiction beliefs into four models: *Nature theory*, *Disease theory*, *Psychological theories*, and *Sociological theories*. Nature theories assert that substance use is a normal response to an innate drive to alter one’s consciousness while addiction is a dysregulation of that normal response. Disease theory views addiction from a medical standpoint as a chronic, relapsing disease, while the Psychological theories consider addiction within the context of social learning, reinforcement, dysfunctional coping mechanisms, and personality type. Finally, the Sociological theories view addiction within the context of environmental and social factors. Not included in Mosher and Akins’ list is the moral model of addiction that views substance use and abuse as a maladaptive personal choice based upon individual values (Schaler, 2000). Examining attitudes about addiction via the addiction models helps to clarify attitudes. However, it is important to consider that no model encompasses the universe of U.S. attitudes about addiction, and it could be that a combination rather than a single model reflects a more accurate description of public attitudes.

Although no formal addiction models existed between 1600 and the early 1900s, the moral and disease models would exemplify beliefs held during those timeframes. In similar fashion, it would be appropriate to place emergence of the nature, psychological, and sociological models between the 1940s and the 1980s with the birth of behavioral and learning theories in the social sciences. Genetic/biological models (i.e., a newer version of the disease model) emerged toward the end of the historical timeline due to advances in science and medicine.
Moral Model.

The moral model of addiction asserts that addicts suffer from weak character and poor will power, that addiction represents a dereliction of personal responsibility, is un-American, and is sinful (Mosher & Atkins, 2007). Schaler (2000) added that free will and personal choice motivates addictive behavior. Adherents to this model demonize substance abuse through association of use with minorities (African Americans and cocaine), with sexual promiscuity and homosexuality (marijuana), and with the evil intentions of foreign countries (Mexican, Asian, Russian drug cartels) (Mosher & Atkins, 2007). Such attitudes precipitate social stigma and greater punitive legal responses to substance use and drug-related crimes (Lee & Rasinski, 2006). Research also suggests that adherence to other models of addiction, such as the disease model does not necessarily preclude concurrent endorsement of the moral model (Moyers & Miller, 1993).

Walters (1999) argued that tenets of moral/spiritual models suffer from “logically incongruent premises” (p. 127). He asserted that these recovery programs promote beliefs that the addict is powerless over the substance, only a higher power can restore the individual to recovery, and the individual must turn over personal will to the higher power in order to find that recovery. However, the very act of turning over one’s will to a higher power implies a level of personal power – which the individual purportedly does not have. Such split responsibility illogically suggests that the addict holds responsibility for some behaviors but not others (Walters, 1999, p. 128). Walters (1999) also argued that moral/spiritual addiction models illogically appeal to an authority (e.g., a deity or a physician) to provide validity for the model when the topic is actually outside of the
authority’s scope. In the moral/spiritual model, adherents label as heretics those who argue against the model tenets and ignore their arguments. Fisher, a prominent addiction researcher, disagreed with Walters’ arguments against spiritual addiction programs, particularly the Twelve-Step program. He asserted that Twelve-Step programs do not promote any model of addiction or any course of action. Rather, the Twelve-Steps are a suggested way of maintaining sobriety (G. Fisher, Personal communication, 2012).

**Disease Model.**

Disease models view addiction as a chronic medical condition characterized by difficulty in controlling substance use. Adherents also assert an essential association between abstinence and recovery. Although disease model proponents have existed since the 1700s, it was not until the early 20th century that the disease model found widespread acceptance in the United States. Important figures in the development of the modern disease model include Bill Wilson and Robert Smith (founders of Alcoholics Anonymous in 1935, in Mosher and Akins, 2007), E. M. Jellinek (1960), Alan Leshner (1997), and A. Thomas McLellan (2002). The Twelve-Steps, while not specifically endorsing addiction as a disease, does suggest that addicts accept personal powerlessness over the substance.

Leshner, Chief Executive Officer of the American Association for the Advancement of Science since 2001, described addiction as a “chronic relapsing disease of the brain” (2001). In concert with this description, Leshner highlighted an addict’s lack of consistent control over craving, compulsion to use, tendency toward chronic relapse, and the neurological damage that occurs in brain tissue subsequent to drug use. McLellan (2002) added that addiction resembles other chronic illnesses such as diabetes, hypertension, and asthma, because medications are used to treat symptoms, relapse is a
common occurrence, and patients fail to cooperate with the medication regimen or make recommended behavioral changes.

Critics of the disease model denounce the association between the brain’s reward pathways, craving, and inability to control substance use. Walters (1999) asserted that defining addiction by a loss of control over use and behavior violates logic through its failure to account for “expectancy effects, controlled drinking, and counter-regulatory behavior in clients with eating disorders” (p. 125). Internalization of the disease model has resulted in the medicalization of maladaptive behaviors, and increased the number of people who erroneously believe that they have no control over these behaviors, and who define life problems in terms of their medical condition (Peele, 1998; Peele and Brodsky, 1991). Finally, Mosher and Akins (2007) argued that the original designation of addiction as a disease lacked scientific validity.

**Nature Model.**

The 1960s Drug Revolution and rise of the hippie counter culture might have been associated with the development of the nature model of addiction (Mosher & Akin, 2007; Weil, 1972). Weil (1972), founder of this model, asserted that people possess an innate and universal drive to alter their consciousness. Support for the existence of such a drive came from the ubiquitous use of psychoactive substances throughout the world, along with risk-taking, consciousness-altering activities such as extreme sports, skydiving and bungee jumping, meditation, spinning, and fasting. As such, use of psychoactive substances is a practical and expedient way to address this drive, and therefore, not necessarily pathological or morally wrong.
In a study reflective of the nature perspective, Abbott-Chapman and Denholm (2001) noted that adults view adolescent risk-taking behavior as a normal part of adolescent development, similar to the nature perspective’s “innate drive.” Adults, believing that risk taking is beneficial to development, encourage their children to take risks with employment and travel, and to experiment with life. However, such normalization of risk-taking may invalidate subsequent attempts to prevent risk-associated harm. Thus, the perspective of risk as developmentally normal may be at odds with admonishments to avoid specific risks involving alcohol, tobacco, sex, or other substances.

**Psychological Model.**

Psychological models of addiction might have developed in the zeitgeist of the 1960s to 1980s with the rise in treatments for mental health disorders and an increasing popularity of psychotherapy, behaviorism, and the study of mental disorders. These models view substance abuse as pathological behavior resulting from low self-esteem (e.g., Self-Derogation model); as behavior that is symptomatic of other underlying personality characteristics (e.g., such as the tendency toward risk-taking found in those with conduct disorder and antisocial personality disorder); as behavior that has been reinforced or learned (e.g., behaviorism) (Mosher & Akins, 2007; West, 1989); or, as a behavior associated with motivation (West, 2001), decision-making and natural drives (West, 1989). One model of addiction, the *Self-Derogation* model, combined psychological and sociological theories to describe substance use and other deviant behaviors as coping mechanisms for low self-esteem in the presence of negative external circumstances (Kaplan, Martin and Robbins, 1982). This model asserted that individuals
naturally pursue positive self-esteem with the goal of maximizing positive self-attitudes and minimizing negative self-attitudes. If an individual is unable to defend against negative, devaluing circumstances within their environment (e.g., poverty, stigma), they lose motivation to conform to normative, and usually legal, behavior. Instead, these individuals deviate toward other behaviors, such as substance use, or deviant groups that they anticipate will allow them to achieve positive self-esteem while avoiding the devaluing contexts within their existing environment.

In another psychological model of addiction, Peele (1990) asserted that addictive behaviors are coping mechanisms that vary with the individual’s situation. This model asserted that addictive behaviors can be outgrown, the individual has personal control over their choices, and total abstinence is not necessary. Such a harm-reductionist approach to addiction supports continued association with the individual’s current social contacts (e.g., work, family, and friends), and unlike the disease model, does not encourage the addict to seek support from other addicts (e.g., in a Twelve-Step program).

**Sociological Model.**

Sociological models of addiction fall the 1980s and later. During this time, public sentiment began to look outside of the individual for explanations of increasing levels of substance use and drug-related crime. These models asserted that the underlying issues in addiction and attitudes about addiction stem from factors external to the individual, lying instead within the social and societal environment. As such, important factors to consider may include family and social environment (Kaplan, Martin, & Robbins, 1982; Mosher & Akins, 2007), economic strain (e.g., poverty), conflict, and social and cultural norms (Beadnell, Wilsdon, Wells, Morison, Gillmore, & Hoppe, 2007; Jones, Darroch, & Singh,
With adolescents for example, particular factors relevant to substance use and addiction may include social and familial issues such as difficulties with schoolwork, and peer and parenting relationships, which provide social and cultural norms (Bahr, Maughan, Marcos, & Li, 1998; Blum, Beuhring, & Rinehart, 2000; Kliewer & Murrelle 2007; Rink, Tricker, & Harvey, 2007; Teichman & Kefir, 2000).

Research supports that the family environment plays a pivotal role in human development through minimization of risk and maximization of protective factors. According to adherents of a sociological theory of addiction, negative and self-devaluing environments such as extreme poverty influence attitudes about substance use through a loss of motivation to conform to normative behavior (Kaplan, Martin, & Robbins, 1982; Mosher & Akins, 2007). Thus, the inability to achieve personal goals through socially acceptable means within the devalued environment translates into efforts to achieve goals through deviant means, including substance use.

Poverty, one specific devalued environment, can isolate families through social exclusion. Even though poverty may be only one factor in the equation, some studies suggest that families in extreme poverty exhibit higher prevalence of substance use and abuse, particularly alcoholism. In a study of 70 poverty-stricken families in Brazil, 78.6% of those surveyed reported that someone in the family used alcohol on a frequent basis (43.6% weekend user, 34.5% daily user, and 21.8% greater than two times per week), 32.9% of respondents had a family member who used illicit drugs, and 20.1% reported a family member specifically used marijuana, cocaine, or crack (Martins, Santos, & Pillon, 2008). In Martins et al.’s study, 50% of respondents expressed indignation or anger that
the family member used drugs, 40.5% displayed resignation, and 9.5% reported other feelings. Although Brazilians tolerate social use of alcohol, 39% of those in the study did not support the drug user at all, and 22% offered assistance helping the user to deal with drug-related issues.

According to the 2006 Gallup Poll, of the 902 adults having a family member with an SUD, 76% of respondents believed that addiction is a disease, and 66% of those characterized the disease as a combination of physical and psychological factors (Carroll, 2006). In contradiction, many listed “lack of willpower” as the main issue in addiction, followed by availability of alcohol and drugs, psychological problems, and stress. Surprisingly, 34% of respondents denied that genetics was a factor in addiction and 43% denied that “living in a situation where other family members used drugs or alcohol” was a factor.

Professional experience with individuals having an SUD also may influence attitudes toward addiction. Abed and Neira-Munoz (1990) found that the majority of general practitioners in a United Kingdom study believed drug addicts to be unreliable patients, blamed the addicts for their addiction, and asserted that addiction is not a medical problem. Ironically, the more years of experience as a physician, the less prepared the physician was to treat addicts and the less likely they were to prescribe methadone. In addition, male physicians, those with smaller practices, and those already treating addicts exhibited greater positive attitudes toward addicts and treatment for addicts.
**Genetic/Neurobiological Model.**

Genetic and neurobiological models of addiction fall at the latest point on the historical timeline as a reflection of the advances in science. These models focus once again on the individual person. Factors in individual variability toward addiction include differences in physiological responsiveness (e.g., to intoxication) and metabolism of psychoactive substances, plus evidence of genetic heritability for addiction. In fact, genetic models note that certain drugs show high heritability indexes suggesting a predisposition toward addiction passes from one generation to the next.

Nora Volkow, Director of the National Institute on Drug Abuse (NIDA) offered that genetics and a combination of genetics and environmental factors account for 40-60% of the individual variability in addiction (2005). Twin studies (particularly in males) provide support for Volkow’s theory, because monozygotic (identical) twins who share an environment and identical genetic makeup show greater similarity in alcohol use patterns (e.g., binge drinking) and alcoholism than do dizygotic (fraternal) twins who share an environment but only 50% of their genetic makeup (Higuchi, Matsushita, & Kashima, 2006). Similarly, adoption studies support the model (Agrawal & Lynskey, 2008). In one classic study, male children of an alcoholic parent(s) were more likely to exhibit alcoholism as an adult than were children of non-alcoholic parents, even when parents reared these children in non-alcoholic environments (Goodwin, Schulsinger, Hermansen, Guze, & Winokur, 1973, in Agrawal & Lynskey, 2008). Finally, recent research regarding specific GABA gene receptor clusters and their correlation with substance dependence supports the genetic model (Agrawal, Edenberg, Foroud, Bierut, Dunne, Hinrichs, et al, 2006).
Alternatively, Mosher and Akins (2007) argued that research has found no genetic marker that reliably predicts addiction. For example, genetic theories may not account for those who drink and have the genetic predisposition due to family history, and yet do not become alcoholics. In addition, as with twin study research, controls cannot eliminate the possibility of confounds such as peer influence and environmental factors.

**Theoretical Perspectives on Addiction Attitude Formation**

Although developing an opinion survey to assess public addiction attitudes may appear to be a straightforward process, it is not. First, the complexity of the addiction coupled with the complexity of attitudes complicates the process. Next, understanding attitudes about addiction must include not only awareness of the specific attitudes, but also an understanding of the formation of these attitudes. The addiction models previously presented defined specific attitudes about addiction. These models elucidated specific beliefs about addiction including etiology and rationale for addictive behaviors, degree of personal responsibility for behavior, and prognosis for change.

Information regarding the latter, an understanding of attitude formation toward addiction, includes understanding the influence of social context and environment, and perhaps, an understanding of why an individual might hold certain attitudes above others. Theories, other than the models of addiction previously discussed, and which provided a degree of explanatory power included Attribution Theory, Social Identity Theory, and Social Influence and Learning theories. The next section provides an overview of these theories, including a discussion of how they inform addiction attitudes and, subsequently, addiction attitude models.
Attribution Theory.

To understand the contribution of attribution theory to attitudes (e.g., about addiction), definitions for both must be understood. Attribution theory explains how individuals evaluate their own and others’ behavior through an attitudinal lens that perceives the behavior of others as causally differently from one’s own – even when the behavior is identical. Attitudes also are hypothetical constructs that include the evaluation of an attitude object (Eagly & Chaiken, 1993). In combining these two definitions for the purpose of this study, causal attributions become representative of the evaluative process in forming attitudes about addictive behavior in one’s self and in others.

Individuals locate the origin of and responsibility for behavior as either within (internal locus of control) or outside (external locus of control) the individual (Heider, 1944; Weiner, 1996). An internal locus of control suggests individual responsibility for the behavior. For example, if I blame myself for getting drunk on Friday night, I have an internal locus of control regarding the behavior. With an external locus of control, responsibility for the behavior belongs to another individual, the situation, context, or environment. Adherents to the moral model of addiction would be more likely to judge addicts as having an internal locus of control, where addiction results from a lack of willpower or moral weakness. Adherents of genetic and disease addiction models also might perceive addicts as having an internal locus of control because the individual chooses to use the drug, but also view addiction as having an external locus of control due to neuronal changes in the brain that influence motivation and behavior. Finally, adherents of the sociological model of addiction might perceive addicts as having an
external locus of control because addiction may be a response to an external situation such as poverty.

Attribution theory also states that individuals evaluate whether a behavior is controllable (choice) or not, and if it is stable (part of personality/nature and likely to reoccur) or unstable (just a fluke and unlikely to reoccur; Newham & Davies, 2007). Weiner (1996) noted that individuals, who perceive alcoholism as controllable, are less likely to offer help than they would for an individual presenting with an uncontrollable situation or illness. Seneviratne and Saunders (2000) compared alcohol-dependent inpatients’ individual attributions for the individual’s and others’ alcohol-related relapses. In this study, participants rated others who relapsed as having responsibility for and control over their relapse (internal locus of control, high personal control, respectively), and asserted that no one else could not have stopped the relapse (low external control). However, when describing their personal relapse, participants reported that neither they nor others could have controlled the relapse (low personal control, low external control, respectively). Although participants also took some responsibility for their personal relapse (internal locus of control), the degree of responsibility was significantly lower than that attributed to others and their relapses. The perception that others possess higher levels of personal control and responsibility for relapse may lead to more negative attitudes and stigma toward addicts.

Similarly, a comparison of attributions for drug use by individuals in drug abuse treatment (treatment group), individuals attending Narcotics Anonymous (NA), and substance-using students not in treatment found all participants exhibiting an internal locus of control (Newham & Davies, 2007). Significant group differences existed
between attributions of stability and controllability. For example, individuals in treatment asserted that use behavior was stable and uncontrollable, while students reported use as unstable and controllable. Essentially, students exhibited self-efficacy in relation to control of their substance use, while those in either treatment group did not, and all participants took responsibility for use. Perhaps, when the behavior is anti-normative, causal attribution can serve the protective function of increasing the perception of out-group dissimilarity, and preserving self-perception, self-esteem, and self-efficacy.

Hatgis, Friedmann, and Wiener (2008) examined college students’ attributions regarding substance use problems related to use of marijuana, crack cocaine, heroin, and alcohol. Results indicated that personal use or abuse by a close friend resulted in lower attributions of personal responsibility for the same substance (external locus of control). Attributions of personal responsibility also were drug-specific, as study participants ascribed greater personal responsibility to use of marijuana than to other substances. This may have reflected college students’ beliefs that marijuana is not as addictive as alcohol, heroin, or cocaine. Finally, males attributed more personal responsibility to other males than to females, and both ascribed more personal responsibility to male than female abusers of alcohol.

Attributional processes also are salient to the formation of attitudes. The development of specific attitudes may rely on the persuasiveness of the messages received, with the degree of persuasiveness increasing when the message is distinctive and consistent across situations and modalities and when there appears to be a consensus among those sending the message (Eagly & Chaiken, 1993). For example, Washoe County DARE program in Nevada, teaches adolescents that drugs are harmful while
participation in social clubs is not (high distinctiveness). If the message heard from respected others (consensus) is consistent, there is greater likelihood that the adolescent will adopt the attitude. Alternatively, if a respected other (peer) discounts the drug-related message, or if the adolescent attributes the message to communicator bias (they had to say that, they are adults), the adolescent will be less likely to believe that drugs are harmful.

From a purely cognitive processing perspective, causal attributions represent a parsimonious, peripheral route mechanism for quickly evaluating one’s environment (e.g., Elaboration Likelihood, Petty & Cacioppo, cited in Eagly & Chaiken, 1993). Petty and Wegener (1998) refer to this process as “a shortcut for assessing the validity of a stance toward an attitude object” (p. 338). Although faster than central route processing, and possibly beneficial under certain circumstances (i.e., assessing danger), causal attributions may lead to underestimation of other important variables (Heider, 1944). For example, the stigma associated with addiction may reflect the attribution of substance abuse to dispositional, stable factors (e.g., being a drunk), ignoring the influence of sociological or psychological factors (e.g., using alcohol to cope with poverty, or peer influence on use behavior). Therefore, although attribution theory is useful when examining individual attitudes, it may be of limited use to a complete understanding of addiction attitudes that encompass sociological and psychological variables.

**Social Identity Theory.**

Unlike the individual approach of attribution theory to an understanding of attitude formation, social identity theory examines attitudes from the perspective of group or social identity. In the 1960s, European Social Psychology added intergroup behavior, a
non-reductionist approach, to the study of social interaction. This theory suggested that the perspective of the collective or social group explains individual behavior. Under that milieu, Henri Tajfel (1978) hypothesized that individuals possess an identity that lies outside the personal self, links the individual to the collective (i.e., society), and satisfies an innate need to belong (Deaux, Reid, Mizrahi, & Cotting, 1999; Hogg, Abrams, Otten, & Hinkle, 2004). Turner (1975) expanded upon Tajfel’s social identity theory, hypothesizing that categorization, including social categorization, is a natural cognitive process through which we organize and make sense of our external worlds.

Individuals within the group share a social identity and compete with other groups for positive, optimal distinctiveness (Brewer, 1991). In addition, members construct and internalize group norms and determine expectations for appropriate behavior as part of the group social identity formation. Clothing style, music preference, values, and even willingness to engage in deviant behavior become part of the resulting group’s identity (Verkooijen, de Vries, & Nielsen, 2007). For example, Straight Edge members are expected to hold conservative values and behavior (e.g., no drugs, no sex), and wear pants called “skinny jeans,” while Emo members wear dark clothing, present as depressed with a negative worldview and a predilection towards self-mutilation. Ingroup members self-stereotype according to an idealized ingroup prototype, and this self-stereotyping produces conformity, ingroup solidarity, and trust. Similarly, ingroup members perceive outgroup members as representative of a prototypical outgroup member, often failing to notice personal identity characteristics that might refute their perception.

Research supports that groups who define themselves as deviant are more likely to engage in substance use and other risky behaviors, and that identification with deviant
groups is associated with increased risk behavior including substance use (La Greca, Prinstein, & Fetter, 2001; Schofield, Pattison, Hill, & Borland, 2003; Van der Rijt, d’Haenens, & Van Straten, 2002). For example, Schofield et al (2003) noted that identification with group norms predicted smoking behavior in adolescents. Verkooijen, de Vries, and Nielsen (2007) examined the association between adolescent group identity and substance use (e.g., marijuana, alcohol, or tobacco), finding a positive association between group identification (ingroup social identity), perceived group norms, and substance use behavior. Identification with a Quiet or Computer Nerd group was associated with lower risk of tobacco use, while identification with a Pop, Skate/Hip-Hop, or Techno group was associated with higher risk. Association with a Sporty, Quiet, or Religious group was associated with low reported use of marijuana, while those in the Hippie or Skate/Hip-Hop group were more likely to have used marijuana in the month prior to the survey. Finally, the likelihood of risky behavior (marijuana and alcohol use only) increased with increases in identification with high-risk groups (and vice versa).

Social Identity Theory provides valuable understanding about the formation of addiction attitudes, suggesting that such attitudes may develop as a function of group identification. The theory postulates that members gain a sense of belonging from group membership, and that conformity to ingroup norms, even deviant ones, are necessary to maintain this social identity. Social Identity Theory also accounts for differences in perception of ingroup and outgroup behaviors. Similar to Attribution Theory, attitudes toward the behavior of outgroup members are generally less forgiving than for ingroup members. For example, survivors in New Orleans after Hurricane Katrina (ingroup members) perceived rescuer (outgroup members) behaviors as hostile, originating from
within the group (internal locus of control), purposely committed (controllable), and stable (likely to continue) (Kemmelmeier, Broadus, & Padilla, 2008). At the same time, survivors described their own behavior as caused by the extreme external circumstances (external control), not within their control, and unstable. In like fashion, it would be reasonable to expect that members of non-drug using conservative groups would view deviant outgroup behavior as stemming from personal weakness (internal locus of control), choice (control), and likely to happen again (stable). However, in spite of these positive factors, Social Identity Theory does not adequately explain attitudes toward addiction from a psychological perspective or explain the individual formation of attitudes apart from the group.

**Social Influence and Social Learning Theories.**

Two final theories that inform addiction attitudes are Social Influence and Social Learning theories. Cialdini and Trost (1998) proposed that the most salient factor in interpersonal interaction is social influence, the components of which are social norms, conformity, and compliance. Each of these components independently assists in meeting the three goals of social influence, “to behave effectively, to build and maintain relationships, and to manage the self-concept” (p. 180).

Social Identity Theory is instrumental in understanding social norms, the first component of social influence. As indicated previously, social norms provide a descriptive function by prescribing the rules and expectations to guide behavior within a particular social context. Social norms also provide an injunctive function that assists in the development of attitudes by providing a standard for evaluation (Cialdini, Kallgren, & Reno, 1991, in Cialdini & Trost, 1998; Cialdini, 2007). Descriptive social norms
represent individual perceptions of what others do. For example, a descriptive social norm might be the perception that all college students drink alcohol at tailgate parties. Injunctive social norms represent the individual’s perception of another’s evaluation of a behavior. For example, an individual might believe that all college students drink at tailgate parties, and might hold the perception that their parents would disapprove of such behavior. Compliance with social norms provides structure for individuals and groups to survive, interact effectively with one another, maintain relationships, and accomplish intended goals. Adherence to social and personal norms or values also is a means to managing self-concept and increasing self-efficacy. Transmission of norms, or the sharing of beliefs, values, and behavioral expectations, occurs through direct and indirect instruction, and verbal and non-verbal methods (Bandura, 2004).

The second component of social influence is conformity. The motivation for conforming to another may include a desire for accuracy, a desire for social harmony, or a desire to avoid appearing deviant. Increased acceptance from group members reinforces adolescent conformity to group expectations (even if deviant). In this situation, attempting to induce compliance with non-deviant social norms may be fruitless unless this conformity more effectively meets the same goals (e.g., increased acceptance) as did the deviant behavior.

The last component of social influence is compliance, the act of motivating another toward acquiescence via a direct or implied request (Cialdini & Trost, 1998). This influence technique provides the foundation for addiction prevention and treatment programs. Compliance professionals use likeable authorities to provide legitimacy and credence to information. That is why Washoe County DARE programs use hometown
police officers to present drug abuse information to students. Generally known and respected within the community, the officers are friendly with the students, sometimes even offering extra assistance to a student considered high risk for substance use.

Compliance increases if the individual believes that an opportunity represents a scarce commodity, or if social validation accompanies the compliance. Compliance also increases if doing so conforms to a self-image of consistent behavior (i.e., If I gave blood two months ago, I am more likely to give again because I now think of myself as a blood donor.), or if the compliance is in the form of a reciprocity. Finally, increased compliance reinforces attitudes about the compliant behavior. For example, if an individual believes that drinking during football games is an appropriate behavior, then compliance with a request to “bring the beer” to a football-watching party will reinforce the pro-drinking attitude.

In a modification of Social Learning Theory called Social Cognitive Theory, Bandura (1986, in Pajares, 2002) added the influence of self-belief to his principles of learning, improving the social influence literature with the understanding that social influence processes are reciprocal. Human behavior is an active interaction between personal factors including cognitive, biological, and affective events, behavior, and the environment (Bandura, 2004, p. 26). As such, individuals act upon and regulate their environment (Pajares, 2002). Social Learning Theory proposes a reciprocal relationship between attitudes and behavior, the environment, and context. For example, attitudes about marijuana influence intention to use, while experience with marijuana influences attitudes toward the drug. Drug prevention scare tactics influence adolescents by direct transmission of a shared norm that particular drugs are harmful (Cialdini & Trost, 1998).
However, the student may challenge and discard the norm as faulty experimentation with the drug fails to produce the expected horrific result.

Social Learning Theory also suggests that individuals learn social norms and attitudes vicariously, through observation of others, if certain conditions are met (Bandura, 2004; Taylor, 1993). First, learning and attitude change occurs when attentional resources are available and used to make meaning of the observation. If individuals ignore as irrelevant efforts to change addiction attitudes, the information is not learned and attitude change does not occur. Second, imagery and verbal encoding processes retain the information. If information transmission about addiction includes medical-ease in dense academic format, there is less likelihood that the average reader will remember the information than if the format is appropriate to the population. Third, the individual must have the capability to reproduce learned information; and fourth, the individual must be motivated to reproduce learned information. Thus, the sharing and modeling of information is essential to the formation and transmission of norms and values that comprise addiction attitudes.

**Summary.**

In summary, just as no addiction model explains the universe of addiction attitudes, no theory completely informs all models of addiction. Attribution Theory provides information useful to understanding attitudes from an individual perspective, and provides some explanation for beliefs associated with the moral and disease models of addiction. Social Identity Theory explains peer influence and group behavior found in the psychological and sociological models of addiction.
However, a combination of Social Influence and Social Learning theories explains more of the addiction models. This combination also provides the best explanation for understanding of addiction attitudes formation, the influence of social context and environment; and, why an individual holds certain attitudes above others. Social Influence and Social Learning theories support the sociological model of addiction, and assist in understanding how modeling and peer associations help to form attitudes. These theories clarify motivating factors in attitude endorsement such as achieving effective behavior, building and maintaining relationships, and managing the self-concept to increase self-esteem and self-efficacy, all useful to the psychological models of addiction. Social Influence and Learning Theory acknowledges the importance of neurobiology and physiology (disease and genetic models) yet discourages a reductionist approach to explaining behavior (nature model; Bandura, 2004). Finally, these theories offer a theoretical understanding of the moral model of addiction as stemming from a need for conformity, and a desire for accuracy, social harmony, and to avoid appearing deviant. In short, a combination of the Social Influence and Social Learning Theories explain attitude formation for the greatest number of addiction models and are the most appropriate to inform development of a measure to assess public addiction attitudes.

**Addiction Attitude Moderators**

Adding to the complexity of addiction and understanding attitudes about addiction is the existence of moderators that influence these attitudes. Although an unequivocal causal relationship cannot be drawn between moderating variables and the formation of attitudes toward addiction, research does support that attitudes about substance use and
abuse vary as a function of age, gender, education, socio-economic status (SES), experience either personally or vicariously with addiction, and political and religious ideology. In addition, attitudes toward use of substances and certain behaviors may differ as a function of the specific addictive substance or behavior. As a corollary, it is possible that attitudes toward addiction will vary depending upon the substance of use or addictive behavior examined.

A discussion of these moderating variables follows with two caveats. First, most of the research presented here presumed an attitude’s existence based upon a subsequent, proximal behavior, and assumed that attitudes influence behavior. A correlation between positive attitudes toward an attitude object and behaviors that result in approach toward said attitude object could support such a relationship. For example, increased substance use would imply positive attitudes toward that behavior. Attitude theorists could argue that this may be a spurious association, because attitudes do not consistently predict specific behavior and it could be that behavior actually influences attitudes (Eagly & Chaiken, 1993). Alternatively, proponents of Fishbein and Ajzen’s Theory of Reasoned Action and Theory of Planned Behavior might argue that attitudes influence intention toward behavior, which is then highly correlated with and predictive of actual behavior (Eagly & Chaiken, 1993).

In a study examining the relationship between subjective norms and attitudes in undergraduate alcohol consumption, Trafimow (1996) noted not only a significant correlation between intention and future behavior, but found that attitudes accounted for all the explainable variance in intention. The moderating variable, previous drunkenness correlated significantly with attitudes, intentions, and future drinking behavior. In
addition, results supported a directional process from attitude \(\rightarrow\) intention \(\rightarrow\) behavior, while behavior did not appear to influence attitude or intention directly.

A more recent study examined whether the effects of interpersonal (e.g., family, peers, school) and intrapersonal variables (e.g., sensation seeking, belief in moral order, alcohol use and smoking) on intention toward and probability of having sex were mediated by attitudes, self-efficacy, and social norms (Beadnell, Wilsdon, Wells, Morison, Gillmore, & Hoppe, 2007). Alcohol consumption, smoking, sensation seeking, and belief in moral order all exhibited strong correlations with intention to have sexual intercourse. In addition, “…intention predicted behavior, and the effects of attitude and self-efficacy on behavior were mediated by intention…” (p. 2856). Alcohol use provided an indirect effect, mediated through norms and attitudes. Smoking exhibited both an indirect effect (partially mediated through norms), but also a direct effect on behavior. The authors propose that those who smoked were already deviating from the norm, and as such, may have been involved in deviant peer groups with greater access to a potential sexual partner pool. Thus, some support exists for a directional association between attitudes, intention and behavior at least for alcohol.

The second caveat is that much of the research on this topic addressed the association between moderating variables, attitudes, and use of specific substances, rather than an association between moderating variables and addiction. As U.S. history about attitudes toward substance use reveals, opinions about the use of psychoactive substances may not equate to attitudes about addiction. During the 1960s counter culture and drug revolution, increases in use of hallucinogenic drugs would suggest that attitudes of young adults toward substance use were generally more positive than in the previous decade.
However, this does not mean that attitudes toward addiction were equally positive. The need for a social reform movement during that same decade to humanize addiction treatment and promote addiction as a disease rather than a vice would imply negative rather than positive attitudes (“Daniel J. Anderson,” 2008; Jellinek, 1960). Explanations for the disparity between positive attitudes about substance use and negative attitudes about addiction may lie in personal beliefs about vulnerability to addiction, a lack of awareness about the addiction process, or a misperception about the link between use, abuse, and addiction. Assuming an association between attitudes toward addicts and addiction also could be incorrect due to failure to consider the influence of other variables. Nevertheless, associating negative attitudes toward abuse with negative attitudes toward addiction does appear to follow a logical order of progression.

Age.

Data from the 2009 National Survey on Drug Use and Health (NSDUH) revealed that substance use and abuse varied significantly by age (SAMHSA, 2010). The rate of illicit drug use (e.g., cocaine, hallucinogens, marijuana, inhalants, heroin, and nonmedical use of stimulants, sedatives, pain medication, or tranquilizers) increased significantly from age 12 (3.6%) to 17 (16.7%), with individuals aged 18-20 exhibiting the highest rate of use (22.2%). Rates of dependence follow similar patterns, with the highest prevalence among adults age 18 to 25 (20%) compared to youths age 12 to 17 (7%) and adults age 26 and older (7.3%). Although substance use in adults over age 50 (6.2%) is significantly lower than for younger adults, NSDUH researchers noted within-group increases since 2002. For example, past month use of illicit drugs in the adults aged 50-59 increased
from 2.7% in 2002 to 6.2% in 2009. For ages 50-54, use increased from 3.4% in 2002 to 6.9% in 2009, and for ages 55-59, use increased from 1.9% in 2002 to 5.4% in 2009.

In a study of 115 Israeli high school students, ages 14-17, researchers examined the relationship between attitudes toward illicit substance use, variables including age, and tobacco and alcohol use (Brook, Feigin, Sherer, & Geva, 2001). Substance use varied as a function of age. Tobacco use increased with age (14-15 yrs, 11%; 16-17 yrs, 47%), and the prevalence of alcohol consumption in 42% of participants doubled from 14-15 yrs to 16-17 yrs, particularly in males. Although admission of illicit drug use was low (1.6%), those admitting use displayed more positive and liberal attitudes toward use, even though self-image was lower for those who used drugs in comparison to peers who did not.

Post-high school, the age-use trend may reverse. Labouvie (1996) in a longitudinal study of individuals from age 21 to 24 until age 28 to 31 found that substance use decreased as respondents grew older. Labouvie suggested that peer influences, often cited as the reason for substance use in adolescents, may be less important than other goal-oriented variables such as marriage and parenthood. In addition, decreases in substance abuse with age may reflect increasing conventionality, as individuals grow older.

In a study of public attitudes about addiction in participants ranging in age from 18-70 years, Furnham and Thomson (1996) found that older respondents and those with no history of addiction were more likely to describe addiction as stemming from unstable family life, poor family and parent role models, and the sociocultural environment. Older respondents were more likely than were younger respondents to view addicts as immoral,
antisocial, or with a biological imbalance. Finally, older and more liberal respondents were more likely to state that effective treatment should emphasize drug-free, isolated communities, with the use of psychopharmacology to aid in withdrawal and treatment.

**Gender.**

Gender is another moderator of attitudes about substance use. In a study of college attitudes toward drug addiction, Garlitz (2007) noted multiple gender differences. Female students were more likely than were males to endorse a disease model of addiction, to believe that drug-related brain changes are a more important issue in female than in male cocaine addicts, and a more important issue in male than in female heroin addicts. Male students were more likely to place responsibility for addiction on the addict, to believe that family interaction influences female heroin addicts, and to assert that drug-related brain changes are a more important issue for male than for female addicts.

Cirakoglu and Isin (2005) noted significant gender differences in attitudes about the etiology of substance abuse in a survey of Turkish university students (age 18-27). Factor analysis supported four factors associated with drug abuse: problems and coping, sensation seeking, social environment, and disposition. Female students were significantly more likely than male students were to attribute drug use to ‘problems and coping;’ including coping behaviors in dealing with emotional problems, suffering, or problematic communication with family members. Female students were more likely to believe that addicts should give up relationships with drug-using peers, should consult rehabilitation centers, and should care about those wanting to help her/him. Females also were more likely to believe a person in recovery should be active in potentially successful
endeavors, believe in their personal ability to recover, and should participate in sports, listen to music, and engage in artistic activities. Male students were more likely to attribute drug use to ‘sensation seeking,’ including attempts to imitate “the stars,” obtain sexual power, or to ameliorate sexual dissatisfaction.

In a recent U.S. study, Tonin, Burrow-Sanchez, Harrison, and Kircher (2008), examined whether Hispanic youth attitudes toward alcohol, marijuana, and inhalants were associated with use in the 30 days prior to the survey, and whether gender or acculturation (language spoken at home) acted as moderators between attitudes and use. Responses supported gender as a moderator between attitudes and use. Female students with more positive attitudes toward use also were more likely to report alcohol use. Male students and youth who spoke primarily Spanish in the home exhibited lower association between attitudes and alcohol use. For inhalant abuse, gender and attitudes but not home language moderated prevalence of use. Females in particular, and males with more positive attitudes toward drug abuse, described higher prevalence of abuse in the 30 days prior to the survey. Prevalence of marijuana use was associated primarily with attitudes toward drug use, but lower school commitment and percentages of minority students in the school also correlated to a lesser degree with increased use.

**Education and Socio-Economic Status.**

Studies indicate that education and socio-economic status (SES) influence attitudes toward abuse and addiction. Education is the individual’s level of academic achievement, the degree of education about substances of abuse and addiction, or both. A national survey of college and university addiction educators revealed that educators who teach addiction courses endorsed addiction as a disease rather than a sign of personal
weakness, and did not believe that addicts have efficacy in controlling their use (Broadus, Hartje, Roget, Cahoon, & Clinkinbeard, 2010). Alternatively, another study of university undergraduate students in majors such as social work, nursing, and criminal justice revealed that these students believed addiction to be a moral weakness or personal failure, indicated that individuals are personally responsible for their recovery, and did not believe that addiction has a genetic basis (Roget, Berry, Clinkinbeard, Hartje, Broadus, Larsen, & Skinstad, 2007).

Forman, Bovasso, and Woody (2001) found that attitudes regarding acceptance of innovative treatment models and use of confrontational treatment approaches varied significantly between those in social work and psychiatry versus those working as case managers or in clerical/support jobs at treatment centers. Those with higher levels of education (e.g., social workers, physicians, and psychiatrists) were more likely to endorse innovative techniques and use of medication, while those with lower levels of education (e.g., case managers and clerical/support staff) endorsed confrontation, 12-step programs and traditional therapy paradigms.

Humphreys, Greenbaum, Noke, and Finney (1996) found that occupation and education moderated beliefs about addiction. Psychologists were more likely to endorse addiction as a socially learned behavior with multiple etiological factors, while substance abuse counselors, psychiatrists, physicians, RNs, and LPNs were more likely to endorse addiction as a disease. In addition, those with higher levels of education and more years of experience in the field were more likely to endorse an eclectic view of addiction than were those with lower levels of education (e.g., clerks).
The relationship between socioeconomic status (SES) and attitudes toward substance use and abuse is complex and this review does not cover the issue in detail. However, the review did examine employment status, one factor relevant to SES. The 2009 NSDUH survey indicated higher prevalence of illicit drug use and dependence among unemployed adults over the age of 18 (17% and 16.6%, respectively) than found in employed (8.0% and 9.6%, respectively) or part-time employed (11.5% and 11.2%, respectively) adults of the same age range (SAMHSA, 2010). Rates of alcohol use were less in unemployed (58.3%) than employed (63.9%) adults, but the rates of heavy use followed the trends found in use of illicit drugs (11.3%, unemployed; 8.5%, employed). It is important to note that associations between use and unemployment may have less to do with attitudes about use than with mechanisms for coping with unemployment or with factors that precipitated the unemployment.

Environment plays a pivotal role in human development through minimization of risk and maximization of protective factors. According to adherents of a sociological theory of addiction, negative and self-devaluing environments such as extreme poverty and unemployment, may influence attitudes about substance use through a loss of motivation to conform to normative behavior (Kaplan, Martin, & Robbins, 1982; Mosher & Akins, 2007). The inability to achieve personal goals through socially acceptable means within the devalued environment translates into efforts to achieve goals through deviant means, including substance use and dysfunctional behaviors. Poverty, a major risk factor in development, can isolate families through social exclusion. Even though poverty may be only one factor in the equation, some studies show that families in extreme poverty exhibit higher prevalence of substance use and abuse, particularly
alcoholism. In a study of 70 poverty-stricken families in Brazil, 78.6% reported that someone in the family used alcohol on a frequent basis (e.g., 43.6% weekend user, 34.5% daily user, and 21.8% greater than two times per week). In addition, 32.9% of respondents reported having a family member who uses illicit drugs, with 20.1% of the family members specifically using marijuana, cocaine, or crack (Martins, Santos, & Pillon, 2008).

**Experience with Substance Abuse.**

Experience, either personally or vicariously, also may influence attitudes toward addiction. In Martins et al’s (2008) study, 50% of respondents expressed indignation and anger that family member used drugs, 40.5% displayed resignation, and 9.5% reported other feelings. Although Brazilians tolerated social alcohol use, 39% did not support the drug user at all, and 22% offered assistance helping the user to deal with drug-related issues.

According to the 2006 Gallup Poll, of 902 adults having a family member with substance use disorder (SUD), 76% believed that addiction is a disease, and 66% of those characterized the disease as a combination of physical and psychological factors (“Public opinion poll shows deep-seated conflict,” 2006). In contradiction, many listed “lack of willpower” as the main issue in addiction, followed by availability of alcohol and drugs, psychological problems, and stress. Surprisingly, 34% of respondents denied that genetics was a factor in addiction and 43% denied that “living in a situation where other family members used drugs or alcohol” was a factor.

Professional experience with individuals having an SUD also may influence attitudes toward addiction. Abed and Neira-Munoz (1990) found that the majority of
general practitioners in a United Kingdom study believed drug addicts to be unreliable patients, blamed the addicts for their addiction, and asserted that addiction is not a medical problem. Ironically, the more years of experience as a physician, the less prepared the physician was to treat addicts and the less likely they were to prescribe medication such as methadone. In addition, male physicians, those with smaller practices and those already treating addicts exhibited the most positive attitudes toward addicts and treatment for addicts.

Therapists with a history of alcohol or drug abuse were more likely than were those with no personal history of abuse to endorse addiction as both disease and a characterological deficiency (Moyers & Miller, 1993), even though this correlation may be the effect of factors such as lower education rather than personal experience with substance abuse (Humphreys, Greenbaum, Noke, & Finney, 1996). Humphreys, Noke, & Moos (1996) noted that recovering staff were more likely to work in programs with goals consistent with 12-step programs rather than cognitive-behavioral approaches, while recovering therapists strongly endorsed an eclectic approach to therapy.

**Political and Religious Ideology.**

Political and religious ideology may influence attitudes toward addiction. Patchell (2005) associated conservative political ideology with endorsement of the moral model of addiction including increased blame toward addicts, while Furnham and Thomson (1996) associated conservative political ideology with greater tendency to view heroin addicts as antisocial, immoral, having a physiological imbalance, or having too much money. Patchell (2005) noted that individuals with a history of substance use tended to be more liberal in their attitudes, while Furnham and Thomson (1996) found a high correlation
between voting habits and attitudes toward addiction. For example, those who voted as liberals were more likely than those who voted as conservative to blame addiction on psychological frustration, despair, financial problems, or stress.

Like the association between SES and addiction attitudes, the association between religious ideologies and attitudes toward addiction is complex. In a study of college students endorsing predominantly Christian beliefs, Stylianou (2004) found an association between religiosity and attitudes about substance use with higher support for religious beliefs directly associated with stronger perceptions of drug use as immoral, and indirectly associated with greater use of social control measures to reduce substance use. Religiosity also is a protective factor associated with reductions in marijuana use, truancy, feelings of depression (Abbott-Chapman & Denholm, 2001; Sinha, Cnaan, & Gelles, 2007), and binge drinking (in heterosexual teenagers) (Rostosky, Danner, & Riggle, 2007). Researchers also correlated religious group membership (i.e., youth groups) with less frequent participation in behaviors adolescents perceive as low risk such as viewing R/X rated videos, tobacco use, sunbathing, skipping school, and alcohol consumption, including binge drinking (Abbott-Chapman & Denholm; Sinha et al).

Researchers correlated religiosity with reduced risk behavior among various racial/ethnic groups. Central American adolescents with personal beliefs in God and high degrees of parental religiosity exhibited lower frequencies of alcohol, tobacco, illicit drugs and marijuana use (Kliwer & Murrelle, 2007). In Hispanic adolescent females, religious beliefs, particularly if enhanced by perceived personal and social costs (e.g., pregnancy) delayed the initiation of intercourse (Blum, Beuhring, & Rinehart, 2000). Ninth grade African American youth who reported attending church were less likely to
engage in sexual intercourse, alcohol use, smoking cigarettes, or marijuana use (Steinman & Zimmerman, 2004). In addition, higher levels of religiosity in 9th grade African American students correlated with reduced increases in marijuana use among males by 12th grade, and reduced cigarette use among African American females by 12th grade. Conversely, greater increases in alcohol use for males and sexual intercourse for females correlated with greater reductions in religiosity between 9th and 12th grade (Steinman & Zimmerman).

**Specific Substance of Abuse or Addictive Behavior.**

Finally, research supports that attitudes about *use* and *abuse* of legal substances (e.g., alcohol, tobacco) or behaviors (e.g., gambling) may differ from attitudes about use and abuse of illegal substances (e.g., cocaine, methamphetamine) or behaviors (e.g., Internet sex). For example, a 1994 Canadian study comparing beliefs about alcohol, cocaine and tobacco abuse found that beliefs about abuse varied according to the specific drug (Cunningham, Sobell, Freedman & Sobell, 1994). In this study, the majority of participants described alcohol abuse as a disease (79.6%), smoking cigarettes as a habit (76%), and cocaine abuse as a sin (51.6%). In addition, attitudes about behavioral disorders such as pathological gambling, obesity, compulsive sexual behavior, compulsive shopping (shopaholics), or workaholism may differ based upon the cost to society and the individual. For example, employers may view workaholism as a desirable, socially acceptable trait, because the behavior benefits the company (Griffiths, 2005). Internet abuse may be considered less serious than substance abuse partially because of the prominent place the Internet holds in our society (O’Brien, 2005), and pathological gambling is universally associated with financial ruin.
There is less information available about differences in attitudes about *addiction* based upon the substance or behavior, and much of the literature appears to presume that these attitudinal differences will mirror those about use and abuse. Cunningham, Sobell, Freedman and Sobell (1994) asked participants to describe beliefs about individuals who abuse alcohol, tobacco and cocaine. The majority described all three types of substance abuse as addiction (alcohol – 89.6%, tobacco – 71.3%, cocaine – 86.8%), suggesting that participants may not have distinguished between abuse and addiction. In like manner, although some research and addiction theories refer to addiction as a universal concept (Mosher & Akins, 2007; Walters & Gilbert, 2000; West, 1989, 2001), other studies used the term addiction interchangeably with abuse (Alexander, 1987; Boyarsky, Dilts, Frances, Frosch, Galanter, Levin, et al., 2002; Luke et al, 2002; Peele & Brodsky, 1991; “Public Opinion Poll,” 2006). As such, further research could determine whether individuals distinguish attitudes about addiction from attitudes about abuse and whether attitudes about addiction differ depending upon the specific substance or behavior, or reflect the more homogenous concept found in emerging theoretical models of addiction.

**Summary.**

Numerous variables may influence attitudes toward addiction and substance use, including age, gender, education, socio-economic status (SES), personal or vicarious experience with abuse or addiction, political and religious ideology, and the specific substances or behaviors of abuse. It is important to remember that these relationships are complex, the relationship may be direct or mediated through other variables, or the outcomes may reflect a combination of variables or unknown factors. For example, the association between religiosity and reduced substance use in adolescents may be a direct
function of the religious belief system that substance use is immoral, a function of increased parental monitoring, or adolescents’ associations with non-using peers.

Awareness of these influential factors poses important implications for the construction of an addiction attitude measure for populations who are not in addiction treatment. Construction of the measure must include as wide a range of population demographics as possible in order to reflect accurately public attitudes about addiction. This means that development of a measure utilizing college undergraduates might limit the generalizability of the measure, failing to capture attitudes exhibited by older individuals, those with higher (or lower) SES, or those with less than a college education. Ideally, focus groups used during item construction would include male and female participants from a variety of ages, education levels, political and religious ideologies, occupations and SES, and experience with substance use. In addition, the research would examine whether public attitudes about addiction reveal a universal construct, or if they, like attitudes about abuse, would vary with the specific substance or behavior.

**Addiction Attitude Measures**

A review of current addiction attitude measures highlighted four deficiencies that limit an understanding of public attitudes about addiction: a) lack of item and subscale consistency across instruments, b) focus on substance and behavioral abuse rather than addiction, c) focus on a limited number of addiction theories, and d) normed on treatment-related populations. First, although multiple attitude assessment instruments emerged in the last 20 years (Anderson & Clement, 1987; Chappel & Veach, 1985; Furnham & Thomson, 1996; Humphreys, Greenbaum, Noke, & Finney, 1996; Luke, Ribisl, Walton, & Davidson, 2002; Moyers & Miller, 1993; Schaler, 1995), scale item
wording and the number of subscale items are inconsistent across the instruments. This makes it difficult to determine if the items are measuring the same attitudinal constructs and brings into question an issue of generalizability. In addition, it makes it difficult to aggregate findings across samples for a better picture of public attitudes about addiction. For example, Luke et al’s (2002) Chronic Disease Subscale on the Addiction Belief Inventory (ABI) includes four items that reference “drinking or drug problem” and “alcoholism/drug abuse,” while Moyers and Miller’s (1993) Disease Model Beliefs Subscale on the Understanding of Alcoholism Scale (UAS) contains 22 items that reference only alcohol. A shortened version of the UAS scale, the Short Understanding of Substance Abuse Scale (SUSS) (Humphreys et al, 1996) has seven items in the Disease Subscale and includes “drugs,” “addict,” and “drug addict.” One item in the ABI, “To be healed addicted persons have to stop using all substances” may not assess the same attitudinal constructs as a similar item in the UAS, “There are only two possibilities for an alcoholic: permanent abstinence or death” or the SUSS, “There are only two possibilities for an alcoholic or drug addict: permanent abstinence or death.” Furnham and Thomson (1996) provide another example. Their Biological Subscale includes five items that measure attitudes about heroin addiction. An item from their instrument, “They have inherited the addiction from their mother who took heroin when she was pregnant” may not tap onto a similar ABI item in the Genetic Basis Subscale, “Alcoholism/drug addiction is inherited.” Development of a standardized instrument would minimize error resulting from variability in procedures, question format, and wording; allow valid comparison of outcome results across samples, and ensure that measurement focus and intent do not vary (e.g., from attitudes about abuse to attitudes about addiction).
Second, most addiction attitude instruments focus on attitudes toward substances and behaviors of abuse, rather than ‘addiction’ (Crawford & Heather, 1987; Cunningham, Blomqvist, & Cordingley, 2007; Cunningham, Sobell, Freedman, & Sobell, 1994; Cunningham, Sobell, & Sobell, 1996; Furnham & Thomson, 1996), or dichotomize addiction into alcoholism and drug addiction (Luke, Ribisl, Walton, & Davidson, 2002). For example, Furnham and Thomson (1996) developed a questionnaire to examine public beliefs about heroin addiction, even while suggesting, “academic and lay beliefs about drug addiction are probably very similar across all addictions” (p. 29). Crawford and Heather’s (1987) *Attitudes and Beliefs about Alcoholism and Alcoholics* scale focused solely on alcohol abuse, as did Moyers and Miller’s (1993) *Understanding Alcoholism Scale*.

As indicated previously, research supported that attitudes about *use* and *abuse* may be influenced by the legality or illegality of the substance or behavior (Cunningham, Sobell, Freedman & Sobell, 1994), the cost to society and the individual (Griffiths, 2005), and the prevalence of the behavior in our society (O’Brien, 2005). As such, attitudes about the various substance and behavioral abuses may show significant differences. The difficulty lies in ascertaining whether attitudes about addiction differ in the same manner. Addiction is a complex construct, which may lack the concrete definition optimal for scientific study (Walters & Gilbert, 2000). Individuals also may fail to distinguish between substance or behavioral abuse and addiction (Cunningham, Sobell, Freedman and Sobell, 1994). Moreover, although some research and addiction theories refer to addiction as a universal concept (Mosher & Akins, 2007; West, 1989, 2001), other studies used the term addiction interchangeably with abuse (Alexander, 1987; Boyarsky,
Dilts, Frances, Frosch, Galanter, Levin, et al., 2002; Luke et al, 2002; Peele & Brodsky, 1991; “Public Opinion Poll,” 2006). As such, further research may determine whether public attitudes about addiction mimic attitudes about abuse known to vary with the specific substance or behavior, or if the public attitudes about addiction reflect the more homogenous concept represented in the emerging theoretical addiction models (Mosher & Akins, 2007).

Third, many of the available instruments used selected addiction models as the theoretical basis of the scale to the neglect of others, thus limiting and skewing the outcome (Cirakoglu & Isin, 2005; Moyers & Miller, 1993; Schaler, 1995). Cirakoglu and Isin’s (2005) Causes of Drug Abuse Scale failed to include items consistent with biological models of addiction; Moyers and Miller’s (1993) Understanding Alcoholism Scale did not consider psychological models of addiction. Garlitz’s (2007) study compared college student attitudes toward addiction based solely on the disease and moral models of addiction, and Schaler’s (1995) Addiction Belief Scale compared adherence to the disease and personal choice models of addiction. Using the Social Influence and Social Learning Theories as the theoretical basis for the addiction attitude scale ensured a greater coverage of the addiction belief models, and increased assessment accuracy and an understanding of public attitudes toward addiction.

Fourth, researchers have not developed instruments specifically for assessment of public attitudes about addiction. Instruments have assessed treatment client attitudes about addiction (Luke et al, 2002), and attitudes of treatment providers, physicians, and staff in direct client care (Anderson & Clement, 1987; Caplehorn, Irwig, & Saunders, 1996; Forman, Bovasso, & Woody, 2001; Moyers & Miller, 1993; Romney & Bynner,
1985; Schaler, 1995; and Watson, Maclaren & Kerr, 2006). In addition, of the few instruments used to examine public attitudes, few arose from research with this population. For example, researchers developed the *Understanding of Alcoholism Scale* (UAS: Moyers & Miller, 1993) and the *Short Understanding of Substance Abuse Scale* (SUSS: Humphreys, Greenbaum, Noke, & Finney, 1996) using treatment provider populations. Upon review of the UAS, Luke et al. (2002) asserted that the lengthy, complex questions might be difficult for non-treatment respondents to understand. Chappel, Veach, and Krug (1985) developed the *Substance Abuse Attitude Survey (SAAS)* to assess changes in medical student attitudes toward substance abuse following a substance abuse course. Factor analysis of the scale revealed five stable factors labeled Permissiveness, Treatment Intervention, Nonstereotypes, Treatment optimism, and Nonmoralism (Chappel & Veach, 1987). Jenkins, Fisher, and Applegate (1990) examined undergraduate student attitudes about addiction using the SAAS, but factor analysis revealed only three stable factors (e.g., Stereotypes and Moralism, Treatment, and Permissiveness). Reasons offered for these findings included the age differences between the medical student sample (i.e., >40 years) and the undergraduate sample (i.e., <26 years), and differences in amount and degree of exposure to substance abuse clients and treatment. Use of the SAAS with psychology graduate students also resulted in different latent constructs than found with medical students (Prine, 1997). Thus, use of instruments for populations other than those on which they were normed creates concern about the instruments’ external validity.

The concept for this dissertation stemmed from a recent project funded by the National Institute of Drug Abuse (NIDA; Broadus, Hartje, Roget, Cahoon, &
Clinkinbeard, 2010). In this study, the researchers utilized the *Addiction Belief Inventory* (ABI, Luke et al., 2002) to assess attitudes about addiction in a national sample of university professors teaching addiction courses. Analysis of the educator survey responses highlighted deficiencies previously mentioned in addiction attitude instruments and suggest that the ABI may be inadequate as a measure of public addiction attitudes.

First, the ABI contained several double-barreled items that alluded to a distinction between attitudes about alcohol abuse and drug abuse. For example, wording such as “alcoholics/addicts,” “drinking or drug,” or “drinking/drug problem” could dissociate the concept of addiction from abuse, causing participants to think about specific substances of abuse rather than the construct of addiction. Such a distinction failed to assess attitudes from the standpoint of addiction represented in emerging theoretical models as a universal construct.

Second, items on the ABI did not reflect the range of theoretical models of addiction. The instrument limited consideration of addiction attitudes to the disease, genetic, and psychological models of addiction. No items assessed attitudes from a sociological or social psychological model where substance use is a learned or intragroup behavior. In addition, Luke et al. (2002) deleted items relevant to the moral model of addiction from the final instrument due to poor internal consistency and negative impact on the overall model fit, even though research supports that people continue to believe that addiction is a moral weakness and character flaw (Carroll, 2006; Moyer & Miller, 1993). Utilizing the Social Influencing and Social Learning Theories as the theoretical underpinning of the proposed instrument would ensure that items represented all
addiction models, would increase accuracy in assessing public attitudes about addiction, and would improve content validity of the instrument.

Third, development of the 30-item ABI included participants in treatment for alcohol abuse \((n = 134)\) and with co-occurring disorders \((n = 536)\). Therefore, the instrument might not be generalizable to public, non-treatment populations. Luke et al’s (2002) confirmatory factor analysis revealed seven stable factors including Inability to Control, Chronic Disease, and Reliance on Experts, Responsibility for Actions, and Responsibility for Recovery, Genetic Basis, and Coping. However, subsequent use of the ABI with addiction educators supported a six-factor solution, including the Moral Weakness subscale (e.g., Coping, Moral Weakness, Chronic Disease, Genetics, Efficacy, and Responsibility for Recovery). In addition, individual questions loaded on different factors than found in Luke et al. (2002). This suggested that the conceptualization of addiction may differ between individuals with substance use disorders and the non-treatment public, and raised the question of external validity. In addition, these results lent support to the need for an instrument targeted toward the public.

The examples cited suggest that current addiction attitude instruments may fail to accurately examine public attitudes about addiction, allow generalization across public samples, or fully represent the complexity of attitudes toward addiction. Development of a standardized instrument, supported by Social Influence and Social Learning Theories, based upon public attitudes and focused on the concept of addiction rather than specific substances (or behaviors) of abuse offered a possible solution to the problem.
Chapter Summary

This literature review encompassed six primary areas:

- A discussion of the definition and complexity of addiction
- A definition of attitudes and the importance of understanding attitudes about addiction
- An overview of the history of addiction attitudes within the U.S. with a discussion of the evolution of addiction models
- An overview of relevant theories that may assist in elucidating public attitudes about addiction
- A discussion of the moderators of addiction attitudes
- A review of the current state of addiction attitude measures

As indicated, addiction is a complex construct, defined by beliefs, culture, religious ideology, and education. Attitudes and beliefs about addiction are complex, and vary across populations and between substances. In addition, the relationships between variables such as gender, age, religiosity, and attitudes may be direct or mediated through other variables. For example, religiosity may have a direct influence on addiction attitudes in adolescents as a function of the religious belief system, of increased parental monitoring, or of adolescent association with non-using peers.

A review of the historical attitudes toward substance use, abuse, and addiction suggested that attitudes vary across time with changes in use, changing social mores surrounding use, and changes in underlying beliefs. Over the course of the time reviewed, attitudes toward substance use evolved from acceptance to rejection and then to
ambivalence. However, over all periods and across all psychoactive substances and addictive behaviors, there existed a universal rejection of addiction.

The development of various models of addiction ran concurrent with this history of attitudes toward psychoactive substances. These models included beliefs about etiological factors, the influence of relevant moderators, the rationale behind and personal responsibility for continued use, the benefits of treatment, and prognosis for change. For this study, addiction beliefs followed Mosher and Akins’ (2007) categorization models: *Nature theory, Disease theory, Psychological theories, and Sociological theories,* with the addition of Schaler’s *Moral theory* (2000).

No addiction model explains the universe of addiction attitudes. Similarly, no social psychological theory completely informs all models of addiction. Of the theories reviewed, *Attribution Theory* provided information useful to understanding attitudes from an individual perspective, and explained beliefs associated with the moral and disease models of addiction. *Social Identity Theory* explained peer influence and group behavior found in the psychological and sociological models of addiction. Alternatively, *Social Influence and Social Learning Theories* provided an understanding of how attitudes develop through modeling and peer associations (sociological addiction models). The combined theories also clarified motivating factors in attitude endorsement and management of the self-concept to increase self-esteem and self-efficacy (psychological models of addiction). Social Influence and Social Learning Theories acknowledged the importance of neurobiology, important to the disease and genetic models of addiction, while encouraging an inclusive approach to encompasses the nature model of addiction (Bandura, 2004). Finally, Social Influence and Social Learning Theories offered the need
for conformity as an explanation for endorsement of the moral model of addiction. In sum, the Social Influence and Social Learning Theories elucidated attitudinal information for the greatest number of addiction models; provided the most appropriate theories to inform development of a measure to assess public addiction attitudes; and, formed the primary theoretical underpinning of this project.

Finally, a review of the current addiction attitude measures identified areas of concern. Although numerous instruments exist to assess attitudes about addiction, it is unclear if all have been standardized, a process that increases test reliability through uniformity in construction, administration, and scoring. Next, existing scales focus on attitudes about specific substances and behaviors of abuse rather than the general concept of addiction found in emerging theoretical models of addiction. This focus limits the feasibility of collapsing data across various studies to represent general attitudes about addiction. Three specific related issues created a significant dilemma in responding to this limitation. First, research supports that attitudes about abuse vary based upon the specific substance and/or behavior. Second, a review of the literature revealed no studies that have examined addiction attitudes as a universal construct. Third, addiction researchers often used the terms abuse and addiction interchangeably when examining and discussing addiction-related attitudes, thus blurring the differences between these concepts. Many scales also focused on specific theoretical models of addiction to the neglect of others; and finally, most scales were normed on treatment-based populations, which raised questions of external validity if used with the public. While many of these instruments offered valuable information, they failed to assess adequately public attitudes about addiction.
The purpose of this study was to address the above areas of concern through development and validation of an addiction attitude instrument specifically for use with the public. The study utilized Social Influence and Social Learning Theories to provide theoretical support for the instrument and ensured that the instrument covered the range of theoretical models about addiction. In addition, the study examined moderators of addiction attitudes and hypotheses based upon the literature review. Included was a research question to determine whether it is possible to assess addiction attitudes as a universal concept irrespective of specific substances and/or behaviors. Although the resulting scale is still preliminary, analysis of Study 3 data included an examination of the social psychological and demographic factors associated with attitudes about addiction.

RQ1: Is it possible to assess addiction attitudes as a universal construct irrespective of specific substances and/or behaviors of abuse?

The following hypothesis emerged from the research question.

H1: Participant attitudes across the social distance attitudinal scales for substances or behaviors of addiction would not differ significantly from their attitudes on the generic “addiction” social distance scale.

As indicated earlier in this chapter, research is scant regarding moderators of public attitudes about addiction. However, the literature did provide information regarding moderators of attitudes toward use and abuse, and it is likely that these variables also moderate attitudes about addiction. The following hypotheses predicted the expected relationship between those moderators (e.g., age, gender, personal experience
with substance abuse or addiction, and political and religious affiliation), and the addiction attitude scales.

Studies by Brook et al. (2001), and Furnham and Thomson (1996), suggested that age moderated attitudes about addiction with younger adults displaying more liberal and older adults more conventional attitudes about use and abuse.

**H2:** As such, younger adults would be more likely than would be older adults to support a Nature model of addiction. Likewise, older adults would be more likely to support a Moral model of addiction.

Gender appeared to influence attitudes about addiction, as well as substance abuse. Based on the literature (Cirakoglu & Isin, 2005; Garlitz, 2007), females were more likely than were males to endorse the Psychological and Disease models of addiction, while males endorse a Moral model of addiction.

**H3:** Thus, in this study females would be more likely to support the Psychological and Disease models of addiction, while males would be more likely to support the Moral model of addiction.

The literature examining individual experience with substance abuse or addiction as a moderator of attitudes toward addiction revealed mixed results. Familial experience with SUDs correlated with characterization of addiction as a disease, a psychological issue, and a moral issue (“Public opinion poll shows deep-seated conflict,” 2006). Professional and personal experience with clients having SUDs correlated with support for the Disease and Moral models of addiction (Moyers & Miller, 1993; Patchell, 2005).

**H4:** Thus, participants with personal history of substance use, abuse or addiction would be more likely to endorse the Disease and Moral models of addiction.
Finally, the literature indicated that political and religious beliefs influenced attitudes toward addiction. Politically conservative participants were more likely to endorse the Moral model of addiction (Patchell, 2005); while politically liberal participants were more likely to endorse the Psychological or Sociological models of addiction (Furnham & Thomson, 1996). In addition, higher religiosity correlated with more support for the Moral model of addiction (Stylianou, 2004).

**HE:** Therefore, politically conservative or highly religious participants would be more likely to support the Moral model of addiction, while politically liberal or less religious participants would be more likely to support the Psychological or Sociological models of addiction.
General Methods Overview

Chapters 3, 4, and 5 consist of separate Methods and Results sections for three sequential studies, each providing the informational base for the subsequent study (see logic models for all studies in Appendix A: Tables A1-A4):

- **Study One**: Item construction, content mapping, and development of addiction attitude survey for Study Two
- **Study Two**: Web-based pilot of addiction attitude instrument using university students, item reduction, and instrument modification for Study Three
- **Study Three**: Web-Based pilot of addiction attitude instrument using Nevada residents, item reduction, scale development and reliability assessment, and evaluation of the moderators of attitudes toward addiction

All studies included Nevada residents as convenience samples and because of the state’s unique position with regard to alcohol and drug use. According to the Behavioral Risk Factor Surveillance System Survey, Nevada’s Washoe County (e.g., Reno metro area) had the highest percentage of heavy alcohol consumption in the nation in 2009 (9.4%; Centers for Disease Control and Prevention (CDC), 2009). In addition, in 2007 heavy alcohol consumption in Nevada’s Clark County (e.g., Las Vegas metro area) increased from 4.6% in 2006 to 6.2% (CDC, 2007). Nevada also is a gateway state for the trafficking of marijuana, methamphetamine, cocaine, and heroin from the Mexican, Asian, and African American drug cartels to the interior of the United State (Chisel, 2007; Nevada Factsheet, 2012). Developing a tool to understand public attitudes about addiction within this population may provide insight into individual choices with regard
to use of these dangerous substances. The University of Nevada, Reno Office of Human Research Protection approved all phases of the project.
Chapter 3: Study 1 Methods and Results

The purpose of Study 1 was to generate a pool of items regarding individual beliefs about and attitudes toward substance use, abuse, and addiction, followed by development of a survey using these items. The item pool represented all intended latent constructs (e.g., the definition of addiction, beliefs about responsibility for addictive behaviors, and attitudes toward substance use, abuse, and addiction, etc.), and covered the existing theories about addiction (e.g., moral, disease/genetic, psychological, sociological, and nature). Three sources provided items for the item pool: focus group inputs, feedback from experts in the field of addiction and survey development, and supplemental items generated to ensure that content mapped onto all addiction theories.

Choosing appropriate items from the universe of possible items during survey development can involve one of three approaches: bottom-up/inductive, top-down/deductive, or a more pragmatic, mixed-methods approach. A bottom-up/inductive approach includes collecting items directly from individuals that represent the population of interest through methods such as individual interviews and focus groups. Inductive approaches, while enhancing the quality of the data’s representation of the reviewed population may not adequately capture the content domain. For example, when measuring public attitudes about addiction, a bottom-up approach may provide better insight into individual attitudes. However, if used alone, this approach may result in a limited or biased item pool, because some content domain may not be salient to the individual.

With a top-down, deductive approach, researchers rely on existing literature, theories, and other “expert sources” to generate survey items. This approach ensures that
all theoretical constructs and content domains are included in the item pool. However, such deductive approaches may not adequately capture the richness of public beliefs and attitudes found with the bottom-up approach (Kisely & Kendall, 2011, Onwuegbuzie & Leech, 2005).

This study used a combined approach that minimized the problems associated with using either inductive or deductive methods, while maximizing the benefits of each (Greene, Caracelli, & Graham, 1989). Focus groups, used first, provided item content through discussion of public beliefs and attitudes about addiction. Next, items from existing instruments supplemented the list, followed by modification based on the feedback of experts in the field of addiction and survey development. Finally, the development process included mapping all items onto the theoretical content areas with item supplementation as needed to ensure adequate coverage of the theoretical constructs and theories. These three processes are discussed below.

**General Method**

**Focus groups.**

**Participants.**

Recruitment for focus group participants included convenience-sampling procedures in order to maximize coverage across specific demographics, including age and gender, and to maximize diversity and increase construct validity. Recruitment for participants occurred in the Reno and Las Vegas metropolitan areas through fliers posted at a Washoe County and Las Vegas senior center and on community bulletin boards. Recruitment fliers included wording to screen out participants if they currently were or had ever been in treatment for a substance use disorder, believed they had a substance use
disorder, are or had been employed in the substance abuse treatment/prevention fields (see Appendix B for focus group materials).

Screening criteria included being 18 years of age or older, fluent in English, having no employment history in the field of addiction treatment or prevention, and having no personal history of substance use treatment. As much as possible, focus groups included participants of similar age in order to achieve group compatibility, increase participant comfort level, and facilitate discussion (McNamara, 2006; Morgan, 1998). Six focus groups and one interview occurred between December 2010 and March 2011 in Reno and Las Vegas, Nevada with 32 participants. The five Reno groups included two with University of Nevada, Reno students, 1 with a local women’s group, 1 with a senior citizen group, and 1 with a mixed-gender/age group. In Las Vegas, the only focus group included senior citizens, followed by an individual interview. Participant numbers varied widely across groups (i.e., from 2-8 participants), in spite of efforts to ensure at least 5-7 participants per group, and one “group” ended with only one person attending. In this latter case, the individual interview included the same focus group format and questions as provided to the other groups.

All focus groups followed policies and procedures for human research protection including maintenance of confidentiality and informed consent.

**Procedures.**

Prior to beginning each group, each participant received a questionnaire packet with instructions to leave it closed until after receiving introductory remarks. Participants received instruction about group ground rules and advisement that participation was voluntary and discussion confidential outside of the group setting. Instructions included
that focus group researchers were recording discussions electronically and on paper because dual data collection methods (e.g., written and electronic) improved capture of participant responses. Facilitated discussions ensured that all had a chance to participate.

Focus groups began with a bottom-up strategy to ensure that items captured public attitudes about addiction. Participants responded in writing to the four questions listed on the first page of the packet. These included items about their attitudes toward addiction, definitions and perceptions of addiction, and descriptions of the characteristics of an addict. These questions focused participant attention on the topic of discussion and helped to solidify individual attitudes about addiction. Following completion of the four questions, individuals discussed the questions as a group.

After discussion, the top-down approach increased content validity of the information provided. Specifically, participants received a packet of six vignettes that described an individual experiencing work and other problems because of dependency upon a particular addictive substance or behavior. Participants read the vignettes and responded to the following questions (see Table 2).
At the close of the session, participants received a verbal summary of their responses to ensure clarity in recording. Participants then completed a demographic questionnaire, including evaluative questions about the focus group process.

**Measures.**

Questionnaire packets contained four focusing items, six vignettes, demographic items, and items asking for feedback about the focus group. The vignettes assigned to each questionnaire packet varied based on a random combination of gender (male or female), race/ethnicity (white, black, Hispanic), substance of abuse (cocaine, alcohol, marijuana), behavior of abuse (internet pornography, gambling), or addiction in general. This combination resulted in 36 possible combinations of issue by gender and race/ethnicity with each combination assigned a number. Using a random number
generator, six of the vignettes were chosen for each packet (see Appendix B; Study 1 Vignettes).

*Focusing Questions.*

Prior to group discussion, participants responded in writing to the four focusing questions:

1) Name three words that describe an addict.

2) What is addiction?

3) What do you think causes addiction?

4) What do you think influences attitudes about addiction?

*Draft vignettes & Demographic items*

Following group discussion, participants completed the remainder of the packet, including the vignettes, demographic items, and general responses to the focus group process. Packets included six vignettes modified from those developed by Link, Phelan, Bresnahan et al (1999). Each vignette included a story about a protagonist with one of the following substance abuse disorders: cocaine addiction, alcohol addiction, marijuana addiction, gambling addiction, exercise addiction, or a generic “addiction.” After reading the vignette, participants rated eleven items on a scale of ‘not at all likely’ (1) to ‘extremely likely’ (6). Vignette items assessed desired social distance and stigma through questions about participant likelihood that they would *move next door to the protagonist*, *spend an evening socializing with the protagonist*, *avoid friendship with the protagonist*, etc. (see Focus Group Materials, Appendix B). Decreased likelihood of participant contact with the protagonist represented greater social distance and stigma. In addition,
the vignettes provided insight into participant beliefs about addiction as a single construct (e.g., the ‘addiction’ vignette), versus a complex construct (e.g., the remaining vignettes).

Demographic variables included gender, age, race/ethnicity, education, marital status, employment status, and family income. Nine questions asked about the focus group process. These included whether the focus group helped to change the participant’s opinion about addiction, provided previously unknown information, or promoted change in expected behavior toward addicts in the future. Finally, participants indicated their opinion about the focus group, offered suggestions for change, and comments in general.

**Expert review.**

**Participants.**

Recruitment procedures for participants in this section included nonprobability purposive sampling to ensure that participants had expertise in the field of addiction or survey development. Inside experts included all dissertation committee members. The pool of potential outside experts included:

- Scott Akins, PhD, Professor, Oregon State University (co-author of *Drug and Drug Policy*, 2007)
- Douglas Luke, PhD, St. Louis University School of Public Health (author of the *Addiction Belief Inventory*, 2002)
- Clayton Mosher, PhD, Washington State University (co-author of *Drug and Drug Policy*, 2007)
- Nancy Roget, Director, Center for the Application of Substance Abuse Technology and the Mountain West Technology Transfer Center.
Procedures.

Four dissertation committee members and three outside experts volunteered to participate. These received the 240-item list from Study 1 with instructions to spend 20-30 minutes reviewing the pool of addiction attitude statements. However, of the three outside experts, all failed to participate during the initial expert review. Therefore, initial modifications followed dissertation committee recommendations. After initial modifications, the initial four outside experts received the 154-item pool with a second request for review. Two (Drs. Clayton Mosher and Scott Akin) provided feedback.

Emailed instructions (for both requests) included that the items represented the current models of addiction, a review of existing theories about addiction, and a review of existing instruments to highlight limitations and support the need for development of a new attitude assessment tool. The recruitment email asked the experts to assess the appropriateness of survey items as measures of attitudes about addiction, and to make suggestions for additional items, deletion of items, and rewording of items. Experts provided general feedback about the theoretical categories, including flagging areas of omission and/or redundancy, followed by a review of individual items for obvious theoretical gaps, duplicates, wordiness, or lack of clarity. In return for their assistance, participants received credit as assisting in the development of the final instrument.

Results

Focus Groups.

Participant responses were transcribed from electronic to written format, and uploaded into the Atlas.ti 6 qualitative analysis software program. This software program assisted in clarifying underlying themes used to generate items for the item pool (or
supplement the existing draft item pool), and assisted in mapping addiction theories onto the items. Questionnaire data, including written responses to the four questions, six vignettes, demographic questions, and group evaluation, were uploaded into Predictive Analytics Software’s (PASW) Statistical Package for the Social Sciences (version 17) software program followed by descriptive analysis.

**Demographics.**

Focus Group participants ranged in age from 18 to 82 years, with a mean of 44.8 years. The majority of participants were female (65.6%), white (78.1%), and single/never married (37.5%). However, 28.1% were married at the time of the study, 3.1% were separated, 18.8% were divorced, and 9.4% were widowed. Just over half (53.1%) of participants were employed. Half of the participants (50.1%) earned $40,000 or less per year, with the largest percentage of these (31.3%) earning less than $20,000 per year. Of the remaining, 15.6% earned from $55,000 to $70,000 per year, 15.7% earned from $70,001 to $150,000 per year and six participants preferred not to respond. Race/ethnicities other than white included Hispanic (12.5%), African American (6.3%), American Indian/Alaska Native (3.1%), and multi-ethnic (6.3%). Over a fifth of participants (21.9%) held a high school diploma (15.6%) or less (6.3%), while 34.4% admitted to having some college education. A few of the participants (3.1%) had earned an associate’s degree, 25.0% held a bachelor’s degree, 9.4% a master’s degree, and 3.1% a doctoral degree.

**Focus group questions and discussion.**

Item pool development included cleaning and modifying the structure of participant responses into survey item format. For example, several participants wrote the
term “compulsion” when asked to describe an addict. Modification of this term provided the following survey item: “Addiction is like a compulsion.” Another participant indicated that “role models” cause addiction. Modification of this phrase provided the item, “Role models can influence someone to use drugs.”

The Dragon Naturally Speaking 10.0, Digital Voice Editor 3 transcription program assisted with transcribing participant responses, followed by uploading a Rich Text Format of the data into the Atlas.ti 6 qualitative analysis software program. Selected for inclusion into the initial item pool were statements reflecting attitudes about addiction. Then, items from eight extant addiction surveys were added resulting in an initial item pool consisted of 525 items with 77.5% (407) coming directly from the focus groups and the remaining 22.5% (118) items from existing addiction attitude surveys and additions made to ensure content coverage of all addiction theories. Extant surveys included: the Substance Abuse Attitude Survey (SAAS, Chappel, Krug & Veach, 1985), the Attitudes and Beliefs About Alcoholism and Alcoholics Questionnaire (ABAA, Crawford & Heather, 1987), the Understanding of Alcoholism Scale (UAS, Moyers & Miller, 1993), the Addiction Belief Scale (ABS, Schaler, 1995), the Theories of Heroin Addiction scale (THA, Furnham & Thomson, 1996), the Short Understanding of Substance Abuse Scale (SUSS, Humphreys, Greenbaum, Noke & Finney, 1996), the Addiction Belief Inventory (ABI, Luke et al, 2002), and the Causes of Drug Abuse Scale (CADAS, Cirakoglu & Isin, 2005).

Development of the item pool followed an iterative process of ordering, review, deletion and/or modification, etc. Initially, all items were grouped theoretically based on a rubric (see Table C3, Appendix C) developed to highlight criteria for each addiction
model (e.g., Sociological, Disease/Biological/Genetic, Moral/Choice, Nature, and Psychological), or addiction as a single/complex construct. Use of the rubric increased the objectivity of the item sorting, while grouping items theoretically ensure sufficient items to represent the theoretical models and research question. The dissertation chairperson reviewed the groups and provided feedback. Items meeting any of the following three criteria were deleted: a) duplicates or redundant (e.g., “Addiction is an illness” is redundant with “Addiction is a disease”), or b) did not make grammatical or logical sense for this survey. Examples of deleted items includes, “Addiction exists because man has not yet evolved enough,” “The addiction-causing chemical in the brain is not predictable,” “Being a victim of "the need" influences my attitudes about addiction,” and “An addict has lost their brain.”

After the initial modification of the item pool, the development process included ordering the remaining items by the focusing questions using the same process as above, followed by the Dissertation Chairperson’s review and feedback. Following another check for redundant or illogical items, items were deleted that:

- Did not fit into the question categories, (e.g., “Addicts are lonely,” “Addicts are not as free as those without addiction are”)
- Were too obvious or would fail to show discriminate validity (e.g., “Addiction destroys lives,” or “Addiction can ruin your health (e.g., destroy your kidneys)” or
- Were too vague to access a specific addiction attitude construct (e.g., “Addicts are helpless,” or “Need causes addiction”)

The resulting item pool consisted of 240 items (see Table 4).
Table 4

*Study 1: Item Source List for Expert Panel, 1st, 6/20/10*

<table>
<thead>
<tr>
<th>Item Source (Including existing surveys)*</th>
<th>Number of Items</th>
<th>Percentage of total item pool</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABAA</td>
<td>5</td>
<td>2.1%</td>
</tr>
<tr>
<td>ABI</td>
<td>30</td>
<td>12.5%</td>
</tr>
<tr>
<td>ABS</td>
<td>10</td>
<td>4.2%</td>
</tr>
<tr>
<td>Added Items</td>
<td>8</td>
<td>3.3%</td>
</tr>
<tr>
<td>CADAS</td>
<td>17</td>
<td>7.1%</td>
</tr>
<tr>
<td>Focus Group</td>
<td>128</td>
<td>53.3%</td>
</tr>
<tr>
<td>SAAS</td>
<td>11</td>
<td>4.6%</td>
</tr>
<tr>
<td>SUSS</td>
<td>7</td>
<td>2.9%</td>
</tr>
<tr>
<td>THA</td>
<td>14</td>
<td>5.8%</td>
</tr>
<tr>
<td>UAS</td>
<td>10</td>
<td>4.2%</td>
</tr>
<tr>
<td><strong>Total Items</strong></td>
<td><strong>240</strong></td>
<td></td>
</tr>
</tbody>
</table>

Items by Theoretical Models

<table>
<thead>
<tr>
<th>Item Source</th>
<th>Number of Items</th>
<th>Percentage of total item pool</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disease/Biological/Genetic</td>
<td>38</td>
<td>15.8%</td>
</tr>
<tr>
<td>Moral/Choice</td>
<td>56</td>
<td>23.3%</td>
</tr>
<tr>
<td>Nature</td>
<td>38</td>
<td>15.8%</td>
</tr>
<tr>
<td>Psychological</td>
<td>43</td>
<td>17.9%</td>
</tr>
<tr>
<td>Sociological</td>
<td>38</td>
<td>15.8%</td>
</tr>
<tr>
<td>Single/Multiple Construct</td>
<td>27</td>
<td>11.3%</td>
</tr>
<tr>
<td><strong>Total Items</strong></td>
<td><strong>240</strong></td>
<td></td>
</tr>
</tbody>
</table>

* ABAA: Attitudes and Beliefs About Alcoholism and Alcoholics Questionnaire; ABI: Addiction Belief Inventory; ABS: Addiction Belief Scale; CADAS: Causes of Drug Abuse Scale; SASS: Substance Abuse Attitude Survey; SUSS: Short Understanding of Substance Abuse Scale; THA: Theories of Heroin Addiction scale; UAS: Understanding of Alcoholism Scale
Expert Review.

As indicated previously, experts assessed whether survey items were appropriate as measures of attitudes about addiction and made suggestions for additional items, deletion of items, and rewording of items. Based on this feedback, modification of the survey items and the item pool followed.

The first expert panel noted several issues. For example, a few items were double-barreled (e.g., “Most addicts don’t know they have a problem and must be forced to recognize they are addicts”). Some items were too vague to load on a single addiction theory thus reducing discriminant validity (e.g., “An addict’s behavior is unpredictable,” and “Addicts support their addiction through crime”). Use of first, second, and third person were inconsistent (e.g., “A person can have a biological predisposition toward addiction because of a higher need for reward and pleasure; You can be addicted to anything from drugs to video games; and, If I choose never to try the substance or behavior, the issue of genetic predisposition becomes moot”). Items used vague references to “they” (e.g., They have a biochemical abnormality, which makes them prone to heroin addiction), and some wording was considered to be too simplistic (e.g., Addiction changes an individual's personality from nice to not so nice). Finally, two experts suggested that items should fall within a 6th to 8th grade reading level to ensure public understanding, and one suggested removal of all items related to risk behaviors.

 Modifications to the item pool based on the above suggestions resulted in a reduction of items from 240 to 154. A review of the grade levels for these 154 items revealed that 79.2% (122) were between 2.3 and 8.8 grade levels, and 18.2% (28) were at high school level. Of the remaining 2.6% (4) of items, all were at the undergraduate
college level (see Table 5). According to the 2003 National Assessment of Adult Literacy (http://nces.ed.gov/naal/), 86% of American adults age 16 or older test at the level of basic prose literacy or above, with 13% of these reading at the graduate college level. Educationally, this translates to reading from the GED/high school equivalency level to graduate school level, and suggests that the item pool reading level is adequate for adult literacy levels. Given this finding and concerns about possibly compromising item content, no further rewording of items to reduce reading level occurred.¹

Table 5

*Study 1: Flesch-Kincaid Grade Level with Item Rewording*

<table>
<thead>
<tr>
<th>Grade</th>
<th>Original Item</th>
<th>Grade</th>
<th>Reworked item</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.3</td>
<td>Physiology, not psychology, determines whether one person will become addicted and another will not.</td>
<td>8.0</td>
<td>A person’s body makeup determines if they will become an addict.</td>
</tr>
<tr>
<td>11.8</td>
<td>If I choose never to try the substance or behavior, the issue of genetic predisposition becomes moot.</td>
<td>7.5</td>
<td>If I choose not to try drugs, the issue of genetic tendency is not important.</td>
</tr>
<tr>
<td>10.2</td>
<td>Ultimately, the addict is responsible to fix him/herself</td>
<td>8.3</td>
<td>It is the addict’s duty to stop their addictive behavior.</td>
</tr>
<tr>
<td>10.3</td>
<td>Children of alcoholics/addicts who drink or use drugs will become alcoholics/addicts.</td>
<td>7.5</td>
<td>People can be born with a tendency toward addiction.</td>
</tr>
</tbody>
</table>

¹ Note: The final instrument overall reading level was at eighth grade, fifth month (e.g., Flesch-Kincaid Grade Level - 8.5).
As indicated previously, expert group members who had not yet reviewed the item pool received the 154-item list (see Table 6) via email along with the second recruitment request. Two experts responded and offered feedback. Dr. Akin suggested reviewing the issue of redundancy again and making an effort to cull at least 30 additional items. Dr. Mosher suggested reduction to an 80-item instrument, and deletion of items related to risky behaviors because such behaviors are indirectly rather than directly associated with addiction. It is important, however, to understand individual beliefs about the causes of risk behaviors, because these beliefs also may influence beliefs about addiction. For example, a belief that negative personality traits are associated with risk behavior may carry over into similar judgments about those with substance dependence. Risk-related items, therefore, remained in the item pool to provide insight into related beliefs about addiction. However, based on the suggestions, eight items were deleted from the pool, leaving 146 items.
<table>
<thead>
<tr>
<th>Item Source*</th>
<th>Number of Items</th>
<th>Percentage of total item pool</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABAA</td>
<td>4</td>
<td>2.6%</td>
</tr>
<tr>
<td>ABI</td>
<td>19</td>
<td>12.3%</td>
</tr>
<tr>
<td>ABS</td>
<td>8</td>
<td>5.2%</td>
</tr>
<tr>
<td>Added Items (cover theoretical groups)</td>
<td>15</td>
<td>9.7%</td>
</tr>
<tr>
<td>CADAS</td>
<td>11</td>
<td>7.1%</td>
</tr>
<tr>
<td>Focus Group</td>
<td>79</td>
<td>51.3%</td>
</tr>
<tr>
<td>SAAS</td>
<td>4</td>
<td>2.6%</td>
</tr>
<tr>
<td>SUSS</td>
<td>4</td>
<td>2.6%</td>
</tr>
<tr>
<td>THA</td>
<td>6</td>
<td>3.9%</td>
</tr>
<tr>
<td>UAS</td>
<td>4</td>
<td>2.6%</td>
</tr>
<tr>
<td>Model</td>
<td>154</td>
<td></td>
</tr>
<tr>
<td>Biological/Genetic</td>
<td>28</td>
<td>18.2%</td>
</tr>
<tr>
<td>Moral/Choice</td>
<td>33</td>
<td>21.4%</td>
</tr>
<tr>
<td>Nature</td>
<td>25</td>
<td>16.2%</td>
</tr>
<tr>
<td>Psychological</td>
<td>25</td>
<td>16.2%</td>
</tr>
<tr>
<td>Sociological</td>
<td>38</td>
<td>24.7%</td>
</tr>
<tr>
<td>Single/Multiple Construct</td>
<td>5</td>
<td>3.2%</td>
</tr>
<tr>
<td>Total Items</td>
<td>154</td>
<td></td>
</tr>
</tbody>
</table>

* ABAA: Attitudes and Beliefs About Alcoholism and Alcoholics Questionnaire; ABI: Addiction Belief Inventory; ABS: Addiction Belief Scale; CADAS: Causes of Drug Abuse Scale; SASS: Substance Abuse Attitude Survey; SUSS: Short Understanding of Substance Abuse Scale; THA: Theories of Heroin Addiction scale; UAS: Understanding of Alcoholism Scale
Draft instrument development.

Important considerations during instrument development included ensuring that questions met the appropriate reading level, ensuring question clarity and addressing issues of question complexity, consideration of context issues (i.e. question order), ensuring optimum instrument length based upon the norm for a participant-to-item ratio ranging from 5:1 to 10:1 (Osborne & Costello, 2004), and defining the response continuum (e.g., Likert, vignette). An open source analysis program located at http://flesh.sourceforge.net/ assessed the grade and reading levels using the Flesch-Kincaid Grade Level and Flesch-Kincaid Reading Ease score. These scores represent an analysis of the number of syllables, words, and sentences within each question. Instrument items rated at a 12th grade or less Flesch-Kincaid Grade Level and Flesch-Kincaid Reading Ease Score and ensured understandability in a non-academic sample.

The instrument was developed in a web-based format using SurveyMonkey.com software with two versions (Form A and B), and random participant assignment to one of the forms. These surveys were identical, but controlled for possible attitude differences due to the gender of the vignette protagonist. For example, Form A listed a male (John) fictional person in the cocaine vignette while in Form B used a female (Mary) fictional person for the cocaine vignette.

Organization of the survey loosely followed sections built from the initial four focus group questions and themes found within the individual items (see Table 7). The initial survey also included the addiction vignettes, demographic questions, and the MC-2(10) social desirability scale. The chosen response continuum consisted of survey items with seven-point scales based on Tahk and Krosnick’s (2011) metanalysis of optimum
scale lengths for the highest reliability in bipolar scales. Finally, open-ended questions followed each section for participants to record issues with wording of questions, clarity or instructions, and to make suggestions for improvement.

Table 7

Study 1: Organizing Themes for Study 2 Survey

<table>
<thead>
<tr>
<th>Section Organizing Question</th>
<th>Number of items</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What is addiction? (Definition)</td>
<td>14</td>
</tr>
<tr>
<td>2. Why do people engage in risky behaviors that lead to addiction?</td>
<td>16</td>
</tr>
<tr>
<td>3. What causes addiction?</td>
<td>23</td>
</tr>
<tr>
<td>4. What factors influence attitudes about addiction?</td>
<td>6</td>
</tr>
<tr>
<td>5. General statements about addiction</td>
<td>57</td>
</tr>
<tr>
<td>6. Now think about the association between addiction, accountability, and personal responsibility</td>
<td>30</td>
</tr>
<tr>
<td>Total</td>
<td>146</td>
</tr>
<tr>
<td>7. Marlowe Crown social desirability scale</td>
<td>10</td>
</tr>
<tr>
<td>8. Demographic items</td>
<td>16</td>
</tr>
<tr>
<td>9. Personal history or experience with the issue of addiction items</td>
<td>14</td>
</tr>
<tr>
<td>10. Vignettes (6 per survey with 12 items each)</td>
<td>72</td>
</tr>
<tr>
<td>Total</td>
<td>102</td>
</tr>
</tbody>
</table>

**Additional Measures.**

*Marlowe-Crowne Social Desirability Scale (MC X2).*

Some individuals may exhibit social desirability bias when responding to surveys, answering items in a direction they believe to be socially acceptable to the researcher or to society. Such responding patterns may skew survey outcomes and lower survey
validity. To check for this bias, the survey included a shortened version of the *Marlowe-Crowne Social Desirability Scale, MC X2(10)* (Strahan & Gerbasi, 1972; see Table C8, Appendix C). The MC X2(10) consists of ten dichotomous items (e.g., ‘1’ = true, ‘0’ = false), five of which were keyed in the positive direction and five in the negative direction. Scale items consist of those that are untrue of most people but are socially desirable (e.g., I never hesitate to go out of my way to help someone in trouble.) or common behaviors that are considered undesirable (e.g., I am sometimes irritated by people who ask favors of me.). To score the MC X2(10), negative items are reverse coded and then participant responses summed (for a total response of 0 to 10). Higher numbers indicate greater social desirability bias.

*Demographic Questions.*

Study 2’s demographic item section was an expansion of the items used in the Study 1 survey (see Appendix B) to include items about gender, age, year in college, highest level of formal education, ethnicity, marital status, political beliefs and identity, socio-economic status, religion and religiosity, and participant personal experience with addiction.

*Vignettes.*

Study 2 included six vignettes, which varied by gender (male/female) and substance/behavior of abuse (addiction, marijuana, cocaine, alcohol, gambling, and exercise). Neither focus group feedback nor expert review precipitated vignette changes from the Study 1 format. In addition, neither ethnicity nor race, used in Study 1, were included in the Study 2 survey as the projected sample size lacked sufficient power for analysis of the additional variables.
Chapter 4: Study 2 Methods and Results

Methods

The purpose of Study 2 was to pilot the initial web-based instrument and test for structural (e.g., item wording clarity and complexity) and grammatical issues. Instrument modifications followed, based on participant suggestions and statistical analysis while maintaining scale reliability and validity.

Participants

A convenience sample of students were recruited from the University of Nevada, Reno via the online Social Research Sign-up System (SONA), and through in-person recruitment in various classrooms within the university’s Division of Health Sciences, Human Development and Family Studies, Center for the Application of Substance Abuse Technologies, Sociology, and the Interdisciplinary Social Psychology Doctoral Program. Potential participants had to be 18 years of age and able to complete a web-based survey. Participants learned during recruitment and on the Participant Information Sheet that they would test an addiction attitude survey, provide feedback for reducing the overall number of survey items, and assist with improving the survey. As an incentive, participants received two research credits. One hundred thirty-five students participated in the survey. However, four surveys with duplicate identification numbers were deleted. Of the 131 remaining surveys, 69 students (52.7%) completed Survey A and 62 students (47.3%) completed Survey B. Finally, 32 participants with social desirability scores more than two standard deviations from the mean and two participants who failed to complete the Marlowe Crowne Social Desirability Bias scale were deleted from the analysis. The resulting sample \( n = 97 \) was used for the analysis.
Procedures.

Access to the University of Nevada, Reno Social Research Sign-Up System (SONA) system was open to all university students, with professors notifying students if this resource was acceptable for research participation credit. SONA provided a URL to access the survey when participants signed up online. Upon entering the survey website, participants were routed to one of two surveys (e.g., Form A or B) based on the day of the month in which they were born. As indicated previously, these surveys were identical except for the gender of the vignette protagonist. For example, if the cocaine vignette in Form A included a male protagonist (e.g., John), then the cocaine vignette in Form B included a female protagonist (e.g., Mary). This controlled for gender-based attitude variation across the vignettes, and allowed us to assess gender as a moderator of those attitudes. The first page of the survey included an information sheet regarding confidentiality, anonymity, expectation of benefits and harm, instructions regarding assistance if needed, a security measure to ensure that participants were 18 years of age or older, and the University Office of Human Research Protection contact information.

Survey instructions advised participants that they would be helping to develop an instrument to assess attitudes about addiction and should be vigilant about wording issues, clarity, and overall testing issues. Open-ended response areas followed at the end of each section of the survey so that participants could provide feedback about the questions within that section. Participants also understood that they could quit at any time or choose not to answer any question without repercussions.
Results

Analysis for group differences included data from both forms of the survey. Chi-square analysis noted significant differences for two items: 1) personal use of an illegal drug \( \chi^2 (1, N = 91) = 4.14, p = .042 \], and 2) self-perception as an addict \( \chi^2 (1, N = 91) = 4.34, p = .037 \]. For a further discussion of these findings, please see below. Given that significant group differences did not occur with the other demographic variables, data from both survey forms was aggregated for the remaining Study 2 analysis.

Marlowe Crowne Social Desirability Assessment.

Social desirability questions from the Marlowe Crowne 10-Item Social Desirability Assessment (MC X2) were collapsed into a scale, ranging from “0 = No evidence of social desirability bias” to “10 = Strong evidence for social desirability bias.” Of the 129 participants who responded to these questions, 32 participants showed evidence of social desirability bias with responses that summed to more than two standard deviations above the mean \( M = 5.26, SD = .165 \). In this case, this equated to a score of seven or higher. In addition, two participants did not provide any responses to the items (see Table 9). These 34 participants were removed from the dataset as their responses could have skew results.
Table 9

**Study 2: MC X2 Output**

<table>
<thead>
<tr>
<th>Number of Positive Responses to Social Desirability Items</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>0.8</td>
</tr>
<tr>
<td>2</td>
<td>8</td>
<td>6.2</td>
</tr>
<tr>
<td>3</td>
<td>15</td>
<td>11.6</td>
</tr>
<tr>
<td>4</td>
<td>18</td>
<td>14.0</td>
</tr>
<tr>
<td>5</td>
<td>35</td>
<td>27.1</td>
</tr>
<tr>
<td>6</td>
<td>20</td>
<td>15.5</td>
</tr>
<tr>
<td>7</td>
<td>15</td>
<td>11.6</td>
</tr>
<tr>
<td>8</td>
<td>11</td>
<td>8.5</td>
</tr>
<tr>
<td>9</td>
<td>4</td>
<td>3.1</td>
</tr>
<tr>
<td>10</td>
<td>2</td>
<td>1.6</td>
</tr>
<tr>
<td>No Response</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>131</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Exploratory analysis of the complete social desirability data (e.g., including those later deleted from analysis) revealed mild skew (Skew = .213) and kurtosis (Kurtosis = -.278; requiring no transformation). Although a significant Kolmogorov-Smirnova ($KS = .151, p = .000$) would suggest non-normal distribution of the errors (Mertler & Vannatta, 2005), a graph of the residuals suggests normal distribution (see Figure 1).
Figure 1. Study 2: Social Bias Residuals Suggested Normal Distribution.

In addition, a scatter plot of the residuals against the predictors suggests homogeneity with a mean of zero (see Figure 2), and a normal distribution for further analysis.
Figure 2. Study 2: Social Bias Residuals versus Predictors Suggests Homogeneity with Mean of Zero.

Analysis of the demographic variables by social desirability bias was significant for only one variable, education. Results indicated that social desirability bias decreases with increases in education ($B = -.378$, $p = .024$). Bias did not differ significantly by gender, age, ethnicity, race, marital or employment status, political affiliation, or religious affiliation.
Demographics.

Participants ranged in age from 18 to 54 years of age, with a mean age of 23 years ($SD = 7.4$). Gender included 65.2% females and 34.8% males. Participants were predominantly Caucasian (86.9%) with the remaining having the following race and ethnicities: Hispanic (15.4%), Black (2.4%), Asian (3.6%), American Indian/Alaska Native (2.4%), and Multiracial (4.8%). The sample included freshman (33.7%), sophomores (7.6%), juniors (21.7%), and seniors (29.3%), and graduate level students (7.6%). When asked their highest level of education, 46.7% of participants indicated that they had completed some college, 30% had a high school diploma or G.E.D, 8.9% an associate’s degree, 11.1% a bachelor’s degree, and 3.3% a master’s degree.

Over 80% of the participants (80.4%) were single or had never been married. Of the remaining, 10.9% were married, 5.4% were living as married, 1.1% were separated,
and 2.2% were divorced. Approximately 47% were employed, with 30.4% earning less than $30,000 per year (see Figure 4), while 26.1% preferred not to respond to the question about family income.

![Family Income 2010](image)

Figure 4. Study 2: Participant Family Income.

No political preference emerged as a majority, although the percentage of Democrats was higher than other political affiliations. Of those who responded, 20.5% described themselves as Independent, 22.7% as Republicans, 34.1% as Democrats, and 22.7% as undecided. When asked their political identity (see Figure 5), 25% described themselves as Independent, 17% as Leaning Democratic, 22.7% as Moderately
Democratic, and 8% as strongly Democrat. Of the remaining, 12.5% described themselves as Leaning Republican, 8% as Moderately Republican, and 6.8% as Strongly Republican.

Figure 5. Study 2: Participant Political Identity.

When asked with which religious family they most identify, 27.9% selected ‘No Religion’ and 24.4% selected Roman Catholic. Of the remaining, 8.1% selected ‘Other’ while 5.8% each selected Baptist. Forty-four percent of the participants indicated that they have never attended formal or religious services, while 28.6% attend less than once a month, 13.2% attend one-to-three times a month, 9.9% attend about once a week, and 4.4% attend more than once a week. Finally, when asked the importance of having a religion (see Figure 6), 26.4% indicated that having a religion was not at all important to them, while 18.7% reported that having a religion was extremely important, and 13.2% indicated that having a religion was neither important nor unimportant.
Figure 6. Study 2: Participant Evaluation on the Importance of Having a Religion.

**Personal Experience with Addiction.**

Finally, participants answered questions about their personal experience with addiction. Two of these questions showed significant group differences: *Have you ever, even once, used an illegal drug?* $\chi^2(1, N = 91) = 4.14, p = .042$, and *Do you believe that you are an addict?* $\chi^2(1, N = 91) = 4.34, p = .037$. Fewer Survey A participants ($n = 21, 23.1\%$) than Survey B participants ($n = 29, 31.9\%$) indicated that they had used an illegal drug in the past. In addition, fewer Survey A participants ($n = 2, 2.2\%$) than Survey B participants ($n = 8, 8.7\%$) described themselves as an addict. Removing from the dataset participants who described themselves as an addict ($n = 10$) did not have a measurable effect on comparison of the demographic variables by survey A or B, although *Have you ever, even once, used an illegal drug*, did become more significant $\chi^2(1, N = 81) = 4.80, p = .028$. Although subscales had not yet been developed by this point in Study 2, preliminary moral and psychology subscales were created using Cronbach alpha analysis.
in order to compare participant responses on the item ‘Do you believe that you are an addict?’ to the two subscales. No between group significance emerged [e.g., Moral theory scale: $F (1, 91) = .014, p = .872$; Psychology theory scale: $F (1, 91) = .478, p = .491$]; therefore, these participants remained in the overall data set.

Over 80% of the participants indicated that someone in their immediate family, or a close friend, had used illegal drugs, while 54.9% admitted they had used illegal drugs at least once in their lifetime. Over three-quarters of the participants (78.0%) knew someone they would describe as an addict, and 10.9% described themselves as an addict.

Approximately 43% indicated that someone in his or her immediate family, or a close friend, had received substance abuse treatment; 9.9% had previously sought counseling for a substance abuse problem or participated in substance abuse treatment, and 13.3% had attended a support group such as Alcoholic or Narcotics Anonymous. Just over 36% of participants reported a family member or close friend had had a substance-related arrest, 48.4% indicated a family member or close friend had been arrested for driving while under the influence of alcohol, and 60.4% admitted they had driven after drinking on at least one occasion. Finally, 18.7% of participants admitted to tobacco use.

**Vignettes.**

Six vignette scales (e.g., Cocaine, Addiction, Alcohol, Marijuana, Exercise, and Gambling) were developed from the items in each of the six vignettes. Responses to each vignette item ranged from ‘1 = Extremely Unlikely’ to ‘7 = Extremely Likely,’ and were re-coded as necessary so that higher scores represented greater desire for social distance from the vignette protagonist. After item re-coding, scales were developed by averaging the row-mean for each vignette item responses. Inter-item reliability analysis was
completed for each scale with a range in Cronbach alphas from $\alpha = .673$ for the Marijuana Social Distance Scale to $\alpha = .760$ for the Addiction Social Distance Scale (see Table 10).

Descriptive analysis provided means and standard deviations for each composite scale (see Table 10). Higher means represented greater desire for social distance and stigma. The premise was that social distance means would not vary significantly from the “generic” addiction vignette if participants viewed all types of addictive behaviors similarly. Such findings would have offered support for the existence of an underlying “addiction construct.”

### Table 10

**Study 2: Vignette Scales Descriptive Statistics**

<table>
<thead>
<tr>
<th>Social Distance Scale</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Alpha ((\alpha))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cocaine social distance scale</td>
<td>97</td>
<td>4.23</td>
<td>.85</td>
<td>.734</td>
</tr>
<tr>
<td>Addiction social distance scale</td>
<td>97</td>
<td>4.28</td>
<td>.86</td>
<td>.760</td>
</tr>
<tr>
<td>Alcohol social distance scale</td>
<td>96</td>
<td>4.14</td>
<td>.83</td>
<td>.750</td>
</tr>
<tr>
<td>Marijuana social distance scale</td>
<td>92</td>
<td>4.03</td>
<td>.78</td>
<td>.673</td>
</tr>
<tr>
<td>Exercise social distance scale</td>
<td>97</td>
<td>3.41</td>
<td>.84</td>
<td>.737</td>
</tr>
<tr>
<td>Gambling social distance scale</td>
<td>97</td>
<td>4.12</td>
<td>.76</td>
<td>.678</td>
</tr>
</tbody>
</table>

Chi-square analysis of the scales by gender found no significant differences in social distance (see Table 11). However, comparison of each social distance scale against
the generic addiction social distance scale using paired sample t-tests did indicate
significant differences between scale means for all comparisons except between the
addiction and cocaine social distance scales. Per the means, participants exhibited the
lowest desire for social distance in vignettes related to exercise and marijuana, and the
highest desire for social distance in vignettes related to ‘addiction’ and cocaine (see Table
12). This variation in mean social distance suggested that attitudes about addiction vary
based upon the substance or addictive behavior and was important to the issue of
generalizability of the instrument.

Table 11

Study 2: Chi-Square Analysis - Social Distance Scale by Gender

<table>
<thead>
<tr>
<th>Social Distance Scale by Gender</th>
<th>Pearson Chi-Square Value</th>
<th>df</th>
<th>N of Valid Cases</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cocaine Social Distance</td>
<td>25.59</td>
<td>35</td>
<td>92</td>
<td>.878</td>
</tr>
<tr>
<td>Addiction Social Distance</td>
<td>41.07</td>
<td>40</td>
<td>92</td>
<td>.424</td>
</tr>
<tr>
<td>Alcohol Social Distance</td>
<td>24.52</td>
<td>34</td>
<td>92</td>
<td>.884</td>
</tr>
<tr>
<td>Marijuana Social Distance</td>
<td>38.51</td>
<td>37</td>
<td>91</td>
<td>.401</td>
</tr>
<tr>
<td>Exercise Social Distance</td>
<td>36.31</td>
<td>34</td>
<td>92</td>
<td>.362</td>
</tr>
<tr>
<td>Gambling Social Distance</td>
<td>31.95</td>
<td>34</td>
<td>92</td>
<td>.569</td>
</tr>
</tbody>
</table>
Table 12

Study 2: Addiction Social Distance Mean versus Each Social Distance Scale Mean

<table>
<thead>
<tr>
<th>Paired Differences</th>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
<th>Mean</th>
<th>Std</th>
<th>Lower</th>
<th>Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Addiction vs. Cocaine social distance scale</td>
<td>-.736</td>
<td>96</td>
<td>.463</td>
<td>-.036</td>
<td>.485</td>
<td>-.134</td>
<td>.061</td>
</tr>
<tr>
<td>Addiction vs. Alcohol social distance scale</td>
<td>2.69</td>
<td>95</td>
<td>.008</td>
<td>.138</td>
<td>.503</td>
<td>.036</td>
<td>240</td>
</tr>
<tr>
<td>Addiction vs. Marijuana social distance scale</td>
<td>3.42</td>
<td>91</td>
<td>.001</td>
<td>.247</td>
<td>.693</td>
<td>.103</td>
<td>.390</td>
</tr>
<tr>
<td>Addiction vs. Exercise social distance scale</td>
<td>8.25</td>
<td>96</td>
<td>.000</td>
<td>.877</td>
<td>1.048</td>
<td>.666</td>
<td>1.088</td>
</tr>
<tr>
<td>Addiction vs. Gambling social distance scale</td>
<td>3.14</td>
<td>96</td>
<td>.002</td>
<td>.169</td>
<td>.530</td>
<td>.062</td>
<td>.276</td>
</tr>
</tbody>
</table>

Preliminary data from Study 2 indicated that type of substance is an important consideration when assessing attitudes. Therefore, Study 3 included “type” of substance as a validity check of the Study 2 findings. In order to reduce the size of the Study 3 survey, two questions replaced the six vignettes, and participants rated substances and behaviors using a negativity scale ranging from “1” (Not at all bad) to “10” (The absolute worst).

The outcome of Study 2 vignettes also raised a question about individual attitudes toward abuse versus addiction. The vignettes presented symptoms consistent with addiction, including continued behavior in spite of negative consequences, tolerance, and withdrawal. However, it is possible that attitudes toward substance or behavioral abuse
(e.g., without indications of tolerance or withdrawal) would have differed from attitudes toward addiction, regardless of the substance or behavior. For example, participants might view exercise or marijuana abuse as less problematic than exercise or marijuana dependency. This consideration and the Study 2 findings prompted a change in the proposed model, adding intensity (e.g., abuse versus addiction) and type of addictive behavior as potential moderators of attitudes toward addiction (see Table 13).
Table 13
Post-Study 2 Modified Model

Box IV
Underlying Construct: Addiction
“The essential feature of dependence (addiction) is a cluster of cognitive, behavioral, and physiological symptoms and consequences indicating that the individual continues the behavior despite significant behavior-related problems” (adapted from the DSM-IV, pg. 176)

Box I
Theoretical Models of Addiction
- Moral Model: Addiction is morally wrong and a personal weakness. Addicts are “bad”
- Disease/Genetic Model: People can be genetically predisposed to addiction. Addiction is a neurobiological condition caused by changes in the brain at the neuronal level that influence motivation, reward, and relapse.
- Psychological: Addiction is a maladaptive coping mechanism
- Sociological: Addiction is a learned behavior
- Nature: Addiction is at the extreme end of a range of normal behavior, and the quest for feeling intoxicated is normal

Box III
Moderators
INTENSITY: Use, Abuse, Addiction

Type of ADDICTIVE BEHAVIOR

Box II
Attitudes about Addiction
Age, gender, race, SES, ethnicity, religious affiliation, religiosity, political affiliation, education, marital status, experience with addiction

Behavioral Outcomes

Box IVa
Social Distance: Stigma & Stereotypes

Jury Decisions

Public policy related to addiction prevention, treatment, and laws
Item Analysis.

The primary purpose of Study 2 was to pilot the Addiction Attitude survey with a small group of participants, followed by modification based upon data analysis and participants comments and concerns. Participant comments (n = 182) were organized by survey area (e.g., Definition of Addiction questions, Risk questions, Cause-related questions, Attitude questions, General Questions, Personal Responsibility questions, and Personal experience with addiction). Table 14 includes a sample comment from each survey area.
Table 14

Study 2, Sample Comments

<table>
<thead>
<tr>
<th>Survey Area</th>
<th>Participant Comment Frequency</th>
<th>Sample Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is Addiction (Definition)</td>
<td>47</td>
<td>Question that states &quot;Addiction is just the extreme end of a normal behavior&quot; should be rephrased. Is it referring to a social curve?</td>
</tr>
<tr>
<td>Why do people engage in risky behaviors that lead to addiction? Risk Behaviors (Risk)</td>
<td>28</td>
<td>Is it normal for teenagers to experiment with drugs is a little vague. Try and be more specific about what types of drugs. Alcohol is a drug in which many teens engage. On the other hand, cocaine and meth are examples of drugs that are not normally experimented.</td>
</tr>
<tr>
<td>What causes addiction? (Cause)</td>
<td>28</td>
<td>Third question wording seems confusing. &quot;Positive about drug use&quot;? &quot;Supports drug use&quot; may be more fitting.</td>
</tr>
<tr>
<td>What factors influence attitudes about addiction? (Attitudes)</td>
<td>12</td>
<td>The statement &quot;Beliefs about addiction can influence attitudes about addiction,&quot; is poorly worded. The word &quot;can&quot; implies subjectivity, while most of the other statements in the study have not created this tone.</td>
</tr>
<tr>
<td>Addiction Attitude Statements (General)</td>
<td>36</td>
<td>The baby boomer question is awkward. I am confused as to what the question infers. Are a lot of baby boomers addicts? How would the average person know this?</td>
</tr>
<tr>
<td>Addiction, Accountability, and Personal Responsibility</td>
<td>24</td>
<td>I think the first question about gambling is confusing. Is it compulsive addictive gambling or occasional gambling? I answered based on addictive gambling.</td>
</tr>
<tr>
<td>What is your personal history or experience with the issue of addiction?</td>
<td>7</td>
<td>Maybe ask how many cigarettes or other tobacco products they use a month because you can smoke but rarely and not even close to every day.</td>
</tr>
<tr>
<td>Total</td>
<td>182</td>
<td></td>
</tr>
</tbody>
</table>
In addition to those listed, several participants noted that the survey was “too long,” and “too repetitive.” Excessive cognitive load on participants may be associated with increased stress and fatigue (Galesic & Bosnjak, 2009; Moskowitz, 2005). Under such negative conditions, participants may choose not to answer questions or may utilize heuristic methods to finish more quickly without carefully considering each item (Groves, Fowler, Couper, Lepkowski, Singer, and Tourangeau, 2009; Krosnick, 1991). These response behaviors negatively affect the reliability and validity of the outcome.

In order to minimize cognitive load, four survey modifications occurred (Dillman, Smyth, and Christian, 2009). First, two shorter vignettes replaced the six vignettes with 12 items each. These new vignettes examined participant attitudes as a function of intensity of use and type of addictive behavior. The vignette story line varied by intensity (e.g., abuse versus addiction; see Table 15) with a fictional male in each vignette. After reading the vignettes, participants rated a variety of risky behaviors on a scale of ‘1 = Not at all bad’ to ‘10 - The absolute worst.’ Behaviors included methamphetamine abuse/addiction, exercise abuse/addiction, heroin abuse/addiction, alcohol abuse/addiction, gambling abuse/addiction, marijuana abuse/addiction, nicotine abuse/addiction, and ecstasy abuse/addiction. Methamphetamine substituted for cocaine in the Study 2 survey, as the White House’s Office on National Drug Control Policy (ONDCP) listed methamphetamine as the most frequently used drug in Nevada (ONDCP, 2008). Ecstasy, a common club drug, also was added to the list as such drugs are “readily available” in Nevada cities, particularly in Southern Nevada (ONDCP, 2008, pg. 4).
Table 15

Study 2: Vignettes for Study 3

<table>
<thead>
<tr>
<th>Intensity</th>
<th>Vignette</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1 - Substance Abuse</td>
<td>The following questions are about John, a friend you’ve known for a long time. John participates in a risky behavior that could be harmful. You’ve hinted that his current problems with his girlfriend may be related to the risky behavior, but he says that he’s just having fun and to stop worrying.</td>
</tr>
<tr>
<td>Level 2 - Substance Dependence – Addiction</td>
<td>The following questions are about John, a friend you've known for a long time. He has been engaging in a risky behavior. In the last few months, this has increased at an alarming rate. Now he's doing it daily. In fact, he is always either doing the behavior or talking about it. The behavior is controlling his life and has ruined your friendship with John. You are now afraid for John, and told him that this behavior is going to kill him. John says he has tried, but cannot stop.</td>
</tr>
<tr>
<td>Instructions after vignette</td>
<td>Below is a matrix of possible risky behaviors that John might be doing. For each item, on a scale of 1 (Not at all bad) to 10 (The absolute worst) tell us how you would rate the behavior in terms of how “bad” it is.</td>
</tr>
</tbody>
</table>

Second, the number of items per survey section on each page was limited to a maximum of 5-7 items with similar question format. Grouping related items per page is common in longer web-based surveys, allows the participant to complete the survey more quickly, and improves cognitive processing of the material (Dillman et al., 2009). Third, the modified matrix format in Study 2 included single items interspersed between sets of matrices. Responding to matrices can be difficult because the participant must match the row (item) with multiple columns (the responses). Adding single items between the matrices reduced the cognitive load. Location of demographic items and those related to personal addiction history changed from the end to the middle of the survey when participants should be less tired. This modification increased response rates for these
critical items. Finally, based on participant feedback, 18 items were deleted and 20 were modified (see Table 16).

Table 16

Study 2: Item Modification Based on Participant Comments

<table>
<thead>
<tr>
<th>Items: Original and Modified</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Original</strong></td>
</tr>
<tr>
<td><strong>Modified</strong></td>
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<tr>
<td><strong>Original</strong></td>
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<tr>
<td><strong>Modified</strong></td>
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<td><strong>Original</strong></td>
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<td><strong>Modified</strong></td>
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<tr>
<td><strong>Original</strong></td>
</tr>
<tr>
<td><strong>Modified</strong></td>
</tr>
</tbody>
</table>
Analysis on remaining items (e.g., 128 items) to assess how the items converged on the addiction theories consisted of Principal Component Analysis with Varimax and Direct Oblimin Rotation. However, the factors failed to converge after 25 iterations due to the high number of items versus the low number of participants. Survey items then were organized by theoretical area, followed by reliability analysis (e.g., Cronbach alphas) and Dissertation chairperson review. Based on discussion with the chairperson regarding conceptual similarity and the low group alpha coefficients (Disease: $\alpha = .405$ with 21 items; Genetic/Neurobiology: $\alpha = .598$ with 11 items), items within the Disease and Genetic/Neurobiological Theories were combined.

Reliability analysis of items within each group followed with elimination of items that reduced the Cronbach Alpha, or whose deletion improved the Cronbach Alpha. Using these criteria resulted in deletion of an additional 32 items, leaving a final sample of 96 addiction-related items. Final coefficients ranged from $\alpha = .71$ for the Disease/Genetic/Neurobiology items, to $\alpha = .89$ for the Psychology items, and suggested good inter-item consistency of the 96 remaining items. The survey for Study 3 included these 96 items, the Marlowe Crowne Social Desirability Scale, demographic items, shortened vignettes, and personal history or experiences with addiction (see Table 17).
Table 17

*Study 2: Survey Organizing Themes for Study 3 Survey*

<table>
<thead>
<tr>
<th>Section Organizing Question</th>
<th>Number of items</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What is addiction? (Definition)</td>
<td>7</td>
</tr>
<tr>
<td>2. Why do people engage in risky behaviors that lead to addiction?</td>
<td>8</td>
</tr>
<tr>
<td>3. What causes addiction?</td>
<td>18</td>
</tr>
<tr>
<td>5. General statements about addiction</td>
<td>42</td>
</tr>
<tr>
<td>6. Now think about the association between addiction, accountability, and personal responsibility</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>96</td>
</tr>
<tr>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>7. Marlowe Crown social desirability scale</td>
<td>10</td>
</tr>
<tr>
<td>8. Demographic items (including open-ended)</td>
<td>22</td>
</tr>
<tr>
<td>9. Personal history or experience with the issue of addiction items</td>
<td>14</td>
</tr>
<tr>
<td>10. Vignettes*</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>73</td>
</tr>
</tbody>
</table>

*Note: By error, the item for cocaine addiction was left out of the survey.*
Chapter 5: Study 3 Methods and Results

Methods

Initially, the primary objective of Study 3 was to finalize the web-based addiction attitudes instrument using a representative sample of Nevada residents. However, the survey development process was more complex than projected, and by the conclusion of Study 2, the survey was still too long to be of practical use. Thus, the modified objectives for Study 3 included further item reduction. First, Study 3 used a purposive stratified sample of Nevada residents to continue the process of balancing parsimony with the desire to develop an instrument that covered all of the theoretical bases. Factor loading and cross-loading levels assisted in determining item appropriateness for inclusion in the instrument; Cronbach alphas assisted in scale development and modification, and correlation matrices assisted in the assessment of subscale discriminant/divergent validity. Two new moderators, ‘intensity of use’ and ‘type of addictive behavior,’ provided analysis of addiction as a complex construct. Finally, potential modifiers of each instrument scale were assessed using demographic variables. The University of Nevada, Reno Office of Human Research Protection approved all research for this study.

Participants.

Purposive stratified sampling procedures were used to recruit a representative sample of Nevada residents, age 18 year or older, through two online survey companies. Based on the Nevada population of adults (age 18 or older) of 1,846,895 residents (American Factfinder, 2008), a sample of 600 would allow for 4% error tolerance and 95% confidence level (“Sample size calculator,” 2010). Initially, the Study 3 survey was
to have had approximately 60 items,\(^2\) and a sample of 600 participants would have provided the “rule of thumb” 10-person to 1-item ratio (Costello & Osborne, 2005, p. 4). Thus, the web-based survey was left open until the sample reached \(n = 607\), with stratification and oversampling used to ensure adequate coverage by gender and of rural residents.

**Procedures.**

Due to “spam laws,” the purchase of an email list for recruitment purposes was not possible. However, it was possible to hire marketing and survey companies to manage the study as long as the individual email addresses remained within their custody. For this study, the companies selected the list of email addresses from their email databases based upon requested demographics and stratification, and assumed responsibility for disbursement of the survey link (via SurveyMonkey.com) to participants. Specifics about these companies are discussed below.

The initial company hired was InfoUSA (http://www.infousa.com/). InfoUSA, a marketing firm located in Nebraska, provided individual addresses for sales leads from an NCOA (National Change of Address) and CASS (Coding Accuracy Support System) certified saturation list. This list was updated every two weeks and included Single Family Dwellings, Multi Family Dwellings, PO boxes, and businesses. Interested individuals emailed this group and requested to become part of their database. For this study, InfoUSA managed an email list averaging 6115 randomly selected email addresses stratified by gender, from residents living in Nevada (see Table 18). The original list

\(^2\) Note that this was a miscalculation as the number of addiction attitude items going into Study 3 was 96. Still, a sample of 600 participants allowed for a 6:1 ratio of participants to items.
(n=6586) was modified at each blast by adding new participants who opted-in to the database, updating incorrect emails, and removing those who either completed the survey, posted an incorrect email address, or requested to be removed from the list.

Participants received recruitment emails in four email blasts on 6/24/11, 7/7/11, 7/21/11, and 7/29/11. Recruitment email open rates varied from 2.4% on 6/24/11 to 3.7% on 7/29/11. (Note: ‘Opens (new)’ in Table 18 are not cumulative.) InfoUSA did not provide participant attrition rates. Per SurveyMonkey.com, 291 participants opened the surveys and, of these, 243 completed them. Thus, the raw response rate (received/completes) was approximately 3.9%, while the completed response rate (opens/completes) was 83.5%.
Table 18

Study 3: InfoUSA Email Blast Report

<table>
<thead>
<tr>
<th>Delivery Information</th>
<th>6-24-11</th>
<th>7-7-11</th>
<th>7-21-11</th>
<th>7-29-11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seed Recipients(^a)</td>
<td>885</td>
<td>882</td>
<td>882</td>
<td>882</td>
</tr>
<tr>
<td>Sent Messages(^b)</td>
<td>6586</td>
<td>6057</td>
<td>5982</td>
<td>5835</td>
</tr>
<tr>
<td>Soft Bounces(^c)</td>
<td>22</td>
<td>9</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Hard Bounces(^d)</td>
<td>355</td>
<td>20</td>
<td>22</td>
<td>10</td>
</tr>
<tr>
<td>Undelivered</td>
<td>176</td>
<td>131</td>
<td>128</td>
<td>160</td>
</tr>
<tr>
<td>Received</td>
<td>6033</td>
<td>5897</td>
<td>5822</td>
<td>5657</td>
</tr>
<tr>
<td>Opens Per Blast (new)(^e)</td>
<td>145</td>
<td>199</td>
<td>205</td>
<td>208</td>
</tr>
<tr>
<td>Opens to net sent emails</td>
<td>2.4%</td>
<td>3.4%</td>
<td>3.5%</td>
<td>3.7%</td>
</tr>
<tr>
<td>Total Click-throughs(^f)</td>
<td>30</td>
<td>35</td>
<td>15</td>
<td>12</td>
</tr>
<tr>
<td>Unsubscribes</td>
<td>12</td>
<td>10</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Total Surveys Completed</td>
<td>0</td>
<td>13</td>
<td>45</td>
<td>243</td>
</tr>
</tbody>
</table>

- \(^a\)Seed Recipients: Seeds recipients include the researchers, survey administrators, and the production team. It does not affect the email blast, and is considered to be a test, live blast for the production team to make sure things are working properly.
- \(^b\)Sent Messages: Total number of records deployed for attempted delivery
- \(^c\)Soft Bounces: Mailbox full, server down, communication error, message not downloaded by recipient, miscellaneous exception
- \(^d\)Hard Bounces: Invalid email address, unknown host, access denied, user account inactive, malformed email address
- \(^e\)Opens: Minimum number of people that have opened the message.
- \(^f\)Click-throughs: The total number of times that any recipient clicked upon a link within the email message (Amanda Ruma, Personal Communication, 6/28/11)

Due to the low InfoUSA response rate on 7/7/11 (n=13), the subject line of the InfoUSA follow-up recruitment email was modified to notify participants that they could participate in a $25 VISA gift card lottery upon participation in the study. Bosnjak and Tuten (2003) previously noted that such incentives improve participant response.

However, by 7/21/11, there still were only 45 participants in the study. When asked about
the low response rates, InfoUSA advised that they took no responsibility for participant responses and were only liable to send out the recruitment emails as directed. Therefore, on 7/21/11, contract negotiations began with Survey Sampling International (http://www.surveysampling.com/; SSI) as an additional recruitment method.

SSI is an international survey company that focuses on providing researchers with “sampling, data collection, and data analytic solutions” (http://www.surveysampling.com/en/General/about-us) using paneled participants. Per the SSI marketing information, they have 28 online panels located in Asia-Pacific, Europe, North American and South America serving 72 nations. Offices within the United States are located in Connecticut, Utah, and California. The VISA gift card lottery was not offered to participants recruited through SSI, because this company pays participants with points that can be used to purchase items from Amazon.com. SSI was instructed to stratify their recruitment with oversampling of rural residents in order to achieve the minimum number of rural participants for adequate representation in the survey (n=75). SSI sent out 1129 email invitations in nine email blasts to a purposive sample of Nevada residents stratified by rural location and gender (see Table 19). By combining InfoUSA rural participants (n=29) to SSI outcomes, the minimum number of rural participants was achieved on 8/8/11. Thereafter, SSI sent 5653 emails in four email blasts to panels of Nevada residents stratified only by gender. SSI did not provide the daily open rates. However, SurveyMonkey.com indicated that 454 participants opened surveys and, of these, 364 were completed. The raw response rate for SSI (total invites/completes) was approximately 5.4%, while the completed response rate (opens/completes) was 80.2%. The surveys remained open for seven weeks (i.e., June 24-
August 11, 2011) with a total sample size of n=607 (InfoUSA n=243; SSI n=364). As
explained below, the sample subsequently was reduced due to evidence of high social
desirability bias (e.g., more than two standard deviations above the participant mean) in
118 of the participants, and failure to complete the social desirability scale in one
participant. As a result, the final sample size was 488.

Table 19

*Study 3: SSI Email Blast Report*

<table>
<thead>
<tr>
<th>Blast Date</th>
<th>7-30</th>
<th>7-31</th>
<th>8-1</th>
<th>8-2</th>
<th>8-3</th>
<th>8-4</th>
<th>8-5</th>
<th>8-6</th>
<th>8-7</th>
<th>8-8</th>
<th>8-9</th>
<th>8-10</th>
<th>8-11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sent Messages</td>
<td>227</td>
<td>38</td>
<td>31</td>
<td>10</td>
<td>12</td>
<td>746</td>
<td>17</td>
<td>13</td>
<td>15</td>
<td>920</td>
<td>1353</td>
<td>3366</td>
<td>14</td>
</tr>
<tr>
<td>Rural Only</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Urban &amp; Rural</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Soft Bounces</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clicks, Errors</td>
<td>106</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Invites</td>
<td>6782</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opens</td>
<td>454</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6.7%</td>
</tr>
<tr>
<td>Total Surveys Complete</td>
<td>364</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5.4%</td>
</tr>
</tbody>
</table>

InfoUSA and SSI recruited a purposive, stratified sample of Nevada residents via
e-mail invitation. Potential InfoUSA participants read that they could help us in
“understanding public beliefs about abuse and addiction,” and that the information
received would help “develop an Addiction Attitude Survey for gathering public attitudes about this important subject.” Participants also read that they would respond to four general question areas: 1) How you define addiction; 2) What you believe to be the causes of addiction; 3) What you believe are causes of risky behavior that may lead to addiction; and 4) Your opinions and personal experiences with abuse and addiction. The recruitment email included the website address (URL), instructions to use the URL to access the survey, and an opt-out email address for removal from the email address list. In addition, the invitation indicated that a lottery would follow the survey with four $25.00 gift cards as a recruitment incentive. As indicated previously, participants received recruitment emails in four email blasts on 6/24/11, 7/7/11, 7/21/11, and 7/29/11.

SSI recruitment emails provided significantly less information about the study due to the company’s recruitment requirements. Recruitment emails for SSI participants asked participants to “share your opinions in a new survey opportunity,” that would give them “20 Opinion Points” for a “20 minute” survey. The recruitment letter did not share information about the survey content. As indicated previously, 6782 participants received SSI recruitment emails across 13 email blasts from 7/30/11 to 8/11/11. As with InfoUSA, the SSI survey group did not provide panel participant attrition rates.

Although the recruitment emails differed from InfoUSA to SSI, all participants received the same information upon opening the first page of the study. Specifically, participants read that they were “being asked to participate in a study to assess the validity and reliability of an instrument being developed to examine public attitudes about addiction. The data from this study also will be analyzed to assess factors that might influence your attitudes, and how these attitudes may differ across various
addictive behaviors. The survey will take approximately 20-25 minutes and you will be asked to give us your opinions and beliefs about addiction, and your personal history with addictive substances or behaviors. In addition, we will provide you with a two brief stories about an individual with addiction, and ask you to rate the individual's addictive behavior. Finally, we will demographic questions about you.”

The web-based survey included a security measure on the opening page to ensure that participants were over 18 years of age, and skipped to the end page if participant’s listed birthday indicated that they were younger than 18 years of age. This end-page advised participants that they were under the required age to participate in the study. For InfoUSA participants who completed the survey, a link on the last page allowed participants to move to another brief survey where they could leave an email address to participate in a lottery for one of four gift cards ($25.00 each). The lottery occurred after the online study closed, winners were notified via email, and gift cards were sent.

**Results**

Data was cleaned and uploaded into the Statistical Package for the Social Sciences program (SPSS, version 18), and the STATA Data Analysis and Statistical Software (SE 10) for analysis using descriptive, multivariate, factor analytic, and reliability statistical procedures. Of the 454 individuals recruited through SSI who opened the survey, 90 were deleted for the following reasons: 47 indicated that they did not wish to participate, two were under age 18 and ineligible to participate, one was from Sherman, California and not considered a Nevada resident, and 40 answered less than 50% of the survey. Individuals deleted from the survey were located in the following counties: Humboldt, Elko, Washoe, Nye, Clark, Lyon, and Carson City County. Of the
291 individuals recruited through InfoUSA, 48 surveys were deleted. Fifteen indicated that they did not wish to participate in the survey. Two failed to give an age, making them ineligible to participate. One was from McKinney, Texas and not a Nevada resident, 12 completed fewer than five questions, and 18 completed fewer than 50% of the survey. Individuals deleted from the survey were located in the following counties: Clark, Nye, and Washoe.

**Marlowe Crowne Social Desirability.**

Prior to analysis and further development of the instrument, I examined the data for Social Desirability Bias and group effect from the use of two recruitment companies. As with Study 2, social desirability bias items from the Marlowe Crowne 10-Item Social Desirability Assessment (MC X2), were collapsed into a scale, ranging from “0 = no evidence of social desirability bias” to “10 = strong evidence of social desirability bias.” Of the 606 participants who responded to these questions, 19.5% (n = 118) received scores that were more than one standard deviation above the mean (M = 5.84, SD = 1.83), and one person did not respond to the questions (see Table 20). Data for 119 participants was deleted from the analysis, because responses may skew the results and lower validity. Therefore, the final sample size is 488.\(^3\)

---

\(^3\) Note: The criterion for deletion due to bias in Study 3 (> 1 SD above the mean) was more stringent than in Study 2 (> 2 SD above the mean) as an extra precaution against biased results that may occur with panel participants (Dillman, Smyth, & Christian, 2009, p. 346).
Table 20

*Study 3: MC X2 Output*

<table>
<thead>
<tr>
<th>Number of Positive Responses to Social Desirability Items</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.00</td>
<td>2</td>
<td>.33</td>
</tr>
<tr>
<td>2.00</td>
<td>13</td>
<td>2.15</td>
</tr>
<tr>
<td>3.00</td>
<td>44</td>
<td>7.26</td>
</tr>
<tr>
<td>4.00</td>
<td>100</td>
<td>16.50</td>
</tr>
<tr>
<td>5.00</td>
<td>99</td>
<td>16.34</td>
</tr>
<tr>
<td>6.00</td>
<td>125</td>
<td>20.63</td>
</tr>
<tr>
<td>7.00</td>
<td>105</td>
<td>17.33</td>
</tr>
<tr>
<td>8.00</td>
<td>70</td>
<td>11.55</td>
</tr>
<tr>
<td>9.00</td>
<td>39</td>
<td>6.44</td>
</tr>
<tr>
<td>10.00</td>
<td>9</td>
<td>1.49</td>
</tr>
<tr>
<td>No Response</td>
<td>1</td>
<td>.2</td>
</tr>
<tr>
<td>Total</td>
<td>607</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Exploratory analysis of the scale revealed moderate negative skew (Skew = -.420) and playtkurtosis (Kurtosis = -.619), plus a significant Kolmogorov-Smirnov test of normality ($KS = .187, p = .000$). However, the normal probability plot (see Figure 7) and a graph of the residuals versus predictors (see Figure 8) suggested that the errors are normally distributed, the data is homogeneous, and the mean of the errors is zero. Therefore, the data is normally distributed (McClave & Sinchich, 2009).
Figure 7. Study 3: Normal Probability Plot.

Figure 8. Study 3: Residuals versus Predictors
Social desirability bias differed significantly by education \( \chi^2 (42, N = 484) = 76.98, p = .001 \), race \( \chi^2 (30, N = 473) = 44.26, p = .045 \), personal history of attendance at a substance abuse support group \( \chi^2 (6, N = 488) = 13.85, p = .031 \), and personal history of treatment \( \chi^2 (6, N = 488) = 15.69, p = .015 \). More specifically, with higher education the rates of social desirability bias decreased (see Figures 9). Multiracial and Black participants exhibited lower social bias responding than those of other races (see Figure 10). However, caution is important with these outcomes given the small sample size of minority participants. Participants who indicated that they had attended a substance abuse support group had lower mean social bias \( (M = 4.87, SD = 1.49) \) than those who had not \( (M = 5.31, SD = 1.40) \). Finally, participants who had a history of substance abuse treatment showed lower mean social desirability bias \( (M = 4.87, SD = 1.51) \) than those who had not \( (M = 5.26, SD = 1.37) \).

**Figure 9.** Study 3: Participant Social Bias Mean Response Frequency by Education Level.
Figure 10. Study 3: Participant Social Bias Mean Response Frequency by Race.

A one-way anova comparing social desirability outcome between Studies 2 and 3 (see Figure 11) indicated significant differences in participant social desirability bias $F(1, 583) = 26.17, p = .000$. Study 3 participants exhibited greater mean social desirability bias ($M = 5.20$, $SD = 1.40$) than did Study 2 participants ($M = 4.42$, $SD = 1.27$). Both studies noted an association between increases in education and decreases in social bias responding. Thus, differences in education levels between Study 2 and 3 may partially account for the differences found in mean social bias responding.
Group-Level Analysis.

Due to differences in recruitment methods and potential differences between paneled and non-paneled participant responses, it was important to assess the feasibility of combining the group-level data (e.g., SSI with InfoUSA). Chi-square analysis and t-tests revealed significant group-level differences across location and age. Specifically, significant group-level differences were found across participant location in cities $[\chi^2(39, N = 488) = 62.21, p = .010]$ and counties across Nevada $[\chi^2(13, N = 488) = 46.24, p = .000]$.

In order to simplify this information, cities and counties were designated as rural or urban based upon the Nevada Commission on Economic Development\(^4\). Subsequent

\(^4\) The Nevada Commission on Economic Development designates a city as rural if it has a population less than 60,000, and a county as rural if it has a population less than 100,000 (http://www.diversifynevada.com/documents/FY%202010%20Incentives-Rural%20Locations.pdf). County population levels were determined using the Census Bureau’s Quickfacts website.
chi-square analysis also showed significant group-level differences across rural and urban participants \[\chi^2(1, N = 488) = 26.24, p = .000\]. InfoUSA recruitment resulted in a greater percentage of urban participants (89.3\%) compared to SSI (69.5\%), and SSI has greater percentage of rural participants (30.5\%) than did InfoUSA (10.7\%). However, SSI recruitment also focused entirely on rural residents for the first nine email blasts (see Table 21).

Table 21

*Study 3: Survey Recruitment Source: Frequency of Participants*

<table>
<thead>
<tr>
<th>Is the participant rural or urban?</th>
<th>Rural</th>
<th>Urban</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Freq</td>
<td>%</td>
<td>Freq</td>
</tr>
<tr>
<td>Recruitment Source</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>InfoUSA</td>
<td>21</td>
<td>10.7%</td>
<td>175</td>
</tr>
<tr>
<td>SSI</td>
<td>89</td>
<td>30.5%</td>
<td>203</td>
</tr>
<tr>
<td>Total</td>
<td>110</td>
<td>22.5%</td>
<td>378</td>
</tr>
</tbody>
</table>

An independent samples t-test examined age by group. Results indicated significant group differences; \(t(477) = 2.85, p = .005\). Participants from InfoUSA \((n = 196)\) were significantly older \((M = 49.48, SD = 14.17)\) than participants from SSI \((n = 292; M = 45.53, SD = 15.29)\). To simplify descriptive statistics, age was re-coded into three age groups based on NSDUH classification (young adults: 18-25; adults: 26-49; older adults: 50 and older). Descriptive analysis revealed that SSI recruitment

(\[http://quickfacts.census.gov/qfd/states/32/32510.html\]), with the result that all counties except for Washoe and Clark were designated as rural counties. For cities at the edges of these counties, the designation was based on city population. Those having fewer than 60,000 residents were designated “rural.”
resulted in a higher percentage of young adults (10.5%) and adults (45.5%) than did InfoUSA recruitment (5.7% and 39.4%, respectively), while InfoUSA had a higher percentage of older adults (54.9%) than did SSI (44.1%; See Table 22).

Table 22

<table>
<thead>
<tr>
<th>Study 3: Age by Group</th>
<th>InfoUSA</th>
<th>SSI</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Freq.</td>
<td>%</td>
<td>Freq.</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-25 years</td>
<td>11</td>
<td>5.7%</td>
<td>30</td>
</tr>
<tr>
<td>26-49 years</td>
<td>76</td>
<td>39.4%</td>
<td>130</td>
</tr>
<tr>
<td>50-80 years</td>
<td>106</td>
<td>54.9%</td>
<td>126</td>
</tr>
<tr>
<td>Total by Group</td>
<td>193</td>
<td>100.0%</td>
<td>286</td>
</tr>
<tr>
<td>No age listed</td>
<td>9</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Univariate analysis suggested that group-level differences were not significant enough to preclude merging of the group data. First, 10% of the survey attitude items were randomly selected for analysis by rural/urban and then by age (i.e., 10 each = 20 items), followed by analysis of main (e.g., group, rural/urban, age) and interaction effects (e.g., group X rural/urban and group X age). These analyses indicated a significant main effect for group $F(1, 480) = 528.52, p = .028$ and for rural/urban $F(1, 480) = 173.06, p = .048$ for one item: *Addiction is more common today than in the 1950s or 60s*, but no interaction effect $F(1, 480) = .001, p = .976$ (see Figure 12). More specifically, InfoUSA participants ($M = 4.8, SE = .201$) and those living in rural Nevada ($M = 4.77, SE = .201$) were more likely to agree with the item above than were SSI participants ($M = 4.64, SE = .108$) or living in urban Nevada ($M = 4.68, SE = .088$; see Figure 12).
Addiction is more common today than in the 1950's or 60's

![Mean Response to Variable by Source and Rural/Urban](image)

*Figure 12. Study 3: Mean Response to Variable by Source and Rural/Urban.*

Analysis of the second 10% of items by age and group resulted in one significant main effect for group, $F(1, 470) = 7.63, p = .026$: *Individuals engage in risky behaviors that might lead to addiction, because they lack self-confidence.* Specifically, InfoUSA participants in each age group were more likely to agree with the item than were SSI participants of the same age (see Figure 13).
Individuals engage in risky behaviors that might lead to addiction, because they lack self-confidence.

![Bar chart showing mean agreement scores for different age groups and sources.](image)

**Figure 13.** Study 3: Mean Response to Item by Source (InfoUSA and SSI) and Age.

In both the rural/urban and age categories, there was one main effect for group (see Tables 23 & 24). Thus, 90% of the items displayed no differences across groups. Given these results, data from both groups merged for further instrument development.
Table 23

*Study 3: Group by Rural/Urban, Items Selected for Analysis*

<table>
<thead>
<tr>
<th>Item</th>
<th>Significant</th>
<th>$F$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Addiction is a disease</td>
<td>ns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Some types of addiction are more harmful than others</td>
<td>ns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Addicts use to escape from bad family situations</td>
<td>ns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Some people have an addictive personality</td>
<td>ns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Saying that addiction is a disease implies a lack of personal responsibility</td>
<td>ns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. The problem is not addiction; the problem is the illegal things that people do to get money for their habits</td>
<td>ns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Addiction is more common today than in the 1950s or 60s</td>
<td>Group</td>
<td>$F (1, 480) = 582.82$</td>
<td>.028</td>
</tr>
<tr>
<td></td>
<td>Rural/Urban</td>
<td>$F (1, 480) = 173.06$</td>
<td>.048</td>
</tr>
<tr>
<td>8. Addicts are failures</td>
<td>ns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. The aging baby boomer population is going to result in a large increase in elderly addicts</td>
<td>ns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. A person's culture influences their attitudes toward addiction</td>
<td>ns</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 24

Study 3: Group by Age, Items Selected for Analysis

<table>
<thead>
<tr>
<th>Item</th>
<th>Significant</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Addicts are capable of drinking or using socially</td>
<td>ns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. An addict continues to use even when they know the cost of their behavior</td>
<td>ns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. What causes addiction? Pain can cause addiction</td>
<td>ns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Individuals engage in risky behaviors that might lead to addiction, because they are depressed</td>
<td>ns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Individuals engage in risky behaviors that might lead to addiction, because they lack self-confidence</td>
<td>Group $F(1,470) = 7.63$</td>
<td>.026</td>
<td></td>
</tr>
<tr>
<td>6. What causes addiction? Addiction is caused by unhappiness in a person's life, marriage, or job</td>
<td>ns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Addicts use to escape from bad family situations</td>
<td>ns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. It is more important to educate people about how drugs harm the body than whether drug use is right or wrong</td>
<td>ns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. What causes addiction? If a person's neighborhood supports drug use, a person is more likely to use drugs</td>
<td>ns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Although risky behavior is a choice, the person is influenced in that choice by their upbringing and education</td>
<td>ns</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Demographics.

Participants ranged in age from 18 to 78, with a mean age of 47.1 years. They were predominantly female (60.2%), urban (77.5%), white (87.5%), married (49.5%), and had completed some college (36%). Remaining participants included the following
racial and ethnic backgrounds: Hispanic (8.5%), Asian (2.5%), Black (6.6%), American Indian/Alaskan Native (0.6%), Pacific Islander, Native Hawaiian (0.4%), and Multiracial (2.3%). When asked their highest level of education, 1.2% of participants indicated that they had completed less than a high school education, 14.5% had completed high school or GED, and 36% had completed some college. Of the remaining, 13.4% earned an Associate’s Degree, 22.3% a Bachelor’s Degree, 9.1% a Master’s Degree, and 1.4% earned a doctorate or medical degree. An additional 2.1% indicated that they had completed another professional degree such as Juris Doctor (JD), technical college, or vocational school. Of those who did not indicate they were married, 21.5% were single or had never been married, 7.9% were living as married, 2.3% were separated, 13.9% were divorced, and 5% were widowed. Over half of the participants were not employed (53.3%) and mean family income was between $50,000 and $60,000 (see Figure 14).

![Family Income Chart](chart)

*Figure 14. Study 3: Participant Family Income.*
Stratified recruitment to obtain a representative sample of the Nevada population in terms of their demographic variables was not successful. However, the participant sample included 13 of the 17 Nevada counties. Missing counties included Esmeralda, Lander, Pershing, and Storey counties (see Figure 15).

**Figure 15.** Study 3: Group by County of Residence.

In addition, the survey sample had higher percentages of white, female, rural, and educated participants than the State, and sampling procedures failed to represent adequately urban or minority populations (see Table 25).
Table 25

*Study 3: Population Percentages, State by Survey*

<table>
<thead>
<tr>
<th>Population Variable</th>
<th>Nevada 2010 Census*</th>
<th>Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Race &amp; Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>66.2%</td>
<td>87.5%</td>
</tr>
<tr>
<td>African American (Black)</td>
<td>8.1%</td>
<td>6.6%</td>
</tr>
<tr>
<td>American Indian/Alaskan Native</td>
<td>1.2%</td>
<td>0.6%</td>
</tr>
<tr>
<td>Asian</td>
<td>7.2%</td>
<td>2.5%</td>
</tr>
<tr>
<td>Native Hawaiian, Pacific Islander</td>
<td>0.6%</td>
<td>0.4%</td>
</tr>
<tr>
<td>Multicultural</td>
<td>4.7%</td>
<td>2.3%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>26.5%</td>
<td>8.5%</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>49.1%</td>
<td>60.2%</td>
</tr>
<tr>
<td>Male</td>
<td>50.9%</td>
<td>39.8%</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>At least a High School Graduate</td>
<td>83.7%</td>
<td>98.8%</td>
</tr>
<tr>
<td>Bachelor’s degree or higher</td>
<td>21.5%</td>
<td>34.9%</td>
</tr>
<tr>
<td>Location**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>9.9%</td>
<td>22.5%</td>
</tr>
<tr>
<td>Urban</td>
<td>90.1%</td>
<td>77.5%</td>
</tr>
</tbody>
</table>


**Politics.**

When asked about political preferences, 28% described themselves as Republican, 26.5% as Independent, 31.1% as Democrat, and 14.3% as undecided. In addition, 25 participants described themselves in an “other” category, with descriptors
such as Technocrat ($n = 1$), Libertarian ($n = 7$), Conservative ($n = 3$), Liberal ($n = 1$), Nonconformist ($n = 1$), Neutral ($n = 1$), Non-voting ($n = 1$), and none ($n = 2$), etc. When asked to describe their political identity, 36.4% described themselves as Leaning, Moderate or Strong Republicans, 27.1% as Independent, and 36.6% as Leaning, Moderate or Strong Democrats. The differences in responding across the two questions may be because the political identity item did not offer “undecided” as a choice. As a result, approximately 10% each of the above totals described themselves as “leaning Republican” and “leaning Democrat.” As with the previous question, 24 participants chose the “other” category, including Conservative Democrat ($n = 1$), Libertarian ($n = 3$) and Progressive Liberal ($n = 1$), etc. Others indicated that they did not follow, did not care about or hated politics, changed their votes depending on the issue, and voted for the best candidate.

**Religion.**

Of those who responded to the question about religious affiliation (see Table 26), the largest group of individuals described themselves as Roman Catholic (21.2%), followed by “no religion” (15.6%), and non-denominational Christian (13.6%). When asked how often they attend formal religious services, the majority (46%) stated that they never attend, while less than 20% indicated that they attend one or more times a week.
Table 26

*Study 3: With which religious family do you most closely identify?*

<table>
<thead>
<tr>
<th>Religious Family</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assemblies of God</td>
<td>3</td>
<td>0.7%</td>
</tr>
<tr>
<td>Atheist</td>
<td>28</td>
<td>6.3%</td>
</tr>
<tr>
<td>Baha’i</td>
<td>1</td>
<td>0.2%</td>
</tr>
<tr>
<td>Baptist</td>
<td>23</td>
<td>5.1%</td>
</tr>
<tr>
<td>Buddhist</td>
<td>9</td>
<td>2.0%</td>
</tr>
<tr>
<td>Catholic/Roman Catholic</td>
<td>95</td>
<td>21.2%</td>
</tr>
<tr>
<td>Christian &amp; Missionary Alliance</td>
<td>4</td>
<td>0.9%</td>
</tr>
<tr>
<td>Christian Reformed</td>
<td>6</td>
<td>1.3%</td>
</tr>
<tr>
<td>Christian Science</td>
<td>2</td>
<td>0.4%</td>
</tr>
<tr>
<td>Church of Christ</td>
<td>5</td>
<td>1.1%</td>
</tr>
<tr>
<td>Church of God</td>
<td>1</td>
<td>0.2%</td>
</tr>
<tr>
<td>Church of the Nazarene</td>
<td>2</td>
<td>0.4%</td>
</tr>
<tr>
<td>Congregational</td>
<td>1</td>
<td>0.2%</td>
</tr>
<tr>
<td>Disciples of Christ</td>
<td>1</td>
<td>0.2%</td>
</tr>
<tr>
<td>Episcopal/Anglican</td>
<td>10</td>
<td>2.2%</td>
</tr>
<tr>
<td>Hindu</td>
<td>2</td>
<td>0.4%</td>
</tr>
<tr>
<td>Jehovah's Witness</td>
<td>3</td>
<td>0.7%</td>
</tr>
<tr>
<td>Jewish</td>
<td>25</td>
<td>5.6%</td>
</tr>
<tr>
<td>Latter-Day Saints</td>
<td>23</td>
<td>5.1%</td>
</tr>
<tr>
<td>Lutheran</td>
<td>15</td>
<td>3.3%</td>
</tr>
<tr>
<td>Methodist</td>
<td>20</td>
<td>4.5%</td>
</tr>
<tr>
<td>Muslim</td>
<td>1</td>
<td>0.2%</td>
</tr>
<tr>
<td>Pentecostal</td>
<td>5</td>
<td>1.1%</td>
</tr>
<tr>
<td>Presbyterian</td>
<td>10</td>
<td>2.2%</td>
</tr>
<tr>
<td>Quaker/Friends</td>
<td>2</td>
<td>0.4%</td>
</tr>
<tr>
<td>Seventh-Day Adventist</td>
<td>1</td>
<td>0.2%</td>
</tr>
<tr>
<td>Unitarian Universalist</td>
<td>3</td>
<td>0.7%</td>
</tr>
<tr>
<td>United Church of Christ</td>
<td>1</td>
<td>0.2%</td>
</tr>
<tr>
<td>Non-Denominational Christian</td>
<td>61</td>
<td>13.6%</td>
</tr>
<tr>
<td>No Religion</td>
<td>70</td>
<td>15.6%</td>
</tr>
<tr>
<td>Don't Know</td>
<td>15</td>
<td>3.3%</td>
</tr>
<tr>
<td>Total</td>
<td>448</td>
<td>100.0%</td>
</tr>
<tr>
<td>No Response</td>
<td>40</td>
<td>8.20%</td>
</tr>
<tr>
<td>Total</td>
<td>488</td>
<td></td>
</tr>
</tbody>
</table>
When asked to rate the importance of having a religion on a scale of 1 “Not at all important” to 7 “Extremely important” (see Figure 16), almost as many indicated that having a religion was not important (23.6%) as those who rated it as extremely important (23%). In addition, the mean ($M = 4.3, SD = 2.2$) was only slightly higher than the neutral response.

![Importance of Having a Religion](image)

**Figure 16.** Study 3: How important to you is having a religion?

The correlation between participant ratings of having a religion as important and church attendance was moderately high and in the positive direction ($R^2 = .59$). For this reason, the items were combined to make a scale called *religiosity*. Higher religiosity scores translated into more frequent church attendance and greater agreement that having a religion is important. Cronbach alpha for this two-item scale was only minimally acceptable ($\alpha = .66$), but allowed for the examination of the relationship between participants’ involvement in religion and their political views.
Correlations between religiosity and political affiliation were low (see Table 27).

A positive relationship occurred only between Republican affiliation and religiosity. The remaining political affiliations negatively correlated with religiosity.

Table 27

Study 3: Correlation Matrix: Religiosity and Political Affiliation

<table>
<thead>
<tr>
<th></th>
<th>Religiosity</th>
<th>Republican</th>
<th>Democrat</th>
<th>Independent</th>
<th>Undecided</th>
</tr>
</thead>
<tbody>
<tr>
<td>Religiosity</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Republican</td>
<td>.247</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Democrat</td>
<td>-.036</td>
<td>-.420</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Independent</td>
<td>-.147</td>
<td>-.375</td>
<td>-.404</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Undecided</td>
<td>-.085</td>
<td>-.255</td>
<td>-.275</td>
<td>-.246</td>
<td>1</td>
</tr>
</tbody>
</table>

Personal Experience with Addiction.

Personal experiences with substance use, abuse, or addiction were high among a large percentage of the participants. When asked about their personal experiences with substance use and addiction, 62.1% \((n = 301)\) of participants admitted to using an illegal drug on at least one occasion, and 68.6% \((n = 335)\) admitted to driving a car after drinking on at least one occasion. Just over 30% \((n = 157)\) indicated that they use tobacco products, and 26.5% \((n = 129)\) described themselves as an addict. Of those who described themselves as having an addiction, the most frequently cited substances of dependence were nicotine, alcohol, opiates (i.e., pain pills), and stimulants, including methamphetamine, cocaine, and amphetamines (see Table 28). Approximately 23% \((n = 113)\) of those who responded indicated that they had attended a substance abuse support group in the past. However, only 36.4% \((n = 47)\) of those who had attended a support group also described themselves as an addict. Just over 14% \((n = 70)\) of the total had
sought counseling for a substance-related problem, and of these 47.1% ($n = 33$) also described themselves as an addict. Possibly as a reflection of the stigma associated with seeking substance abuse treatment, the correlation between self-perception as an addict and a history of treatment was very low ($R^2 = 0.192$).

Table 28

**Study 3: Addictive Substance and/or Behavior**

<table>
<thead>
<tr>
<th>Addictive Substance and/or Behavior</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol</td>
<td>24</td>
</tr>
<tr>
<td>Caffeine</td>
<td>7</td>
</tr>
<tr>
<td>Chocolate</td>
<td>1</td>
</tr>
<tr>
<td>Everything</td>
<td>1</td>
</tr>
<tr>
<td>Food</td>
<td>9</td>
</tr>
<tr>
<td>Gambling</td>
<td>6</td>
</tr>
<tr>
<td>Internet</td>
<td>2</td>
</tr>
<tr>
<td>Marijuana</td>
<td>8</td>
</tr>
<tr>
<td>Methamphetamines, Cocaine and other stimulants</td>
<td>13</td>
</tr>
<tr>
<td>Money or Shopping</td>
<td>3</td>
</tr>
<tr>
<td>Nicotine</td>
<td>38</td>
</tr>
<tr>
<td>Opiates</td>
<td>8</td>
</tr>
<tr>
<td>Porn or Sex</td>
<td>4</td>
</tr>
<tr>
<td>Recovering</td>
<td>7</td>
</tr>
<tr>
<td>Unnamed Drugs</td>
<td>4</td>
</tr>
<tr>
<td>God</td>
<td>1</td>
</tr>
<tr>
<td>Xanax</td>
<td>1</td>
</tr>
</tbody>
</table>

Just over 82% ($n = 400$) reported that they had known someone they would describe as an addict. In addition, 83.4% ($n = 407$) reported that a family member or close friend had used illegal drugs, 35.5% ($n = 173$) indicated that a family member or close friend had been arrested for illegal drug use, and 52.2% ($n = 254$) indicated that a
family member or close friend had been arrested for drinking and driving. Finally, 46.9% 
\((n = 229)\) indicated that a family member or close friend had participated in substance 
abuse treatment.

**Intensity by Type.**

Study 3 analysis supported Study 2’s findings that individuals view addiction as a 
complex construct with attitudes that vary type of use or behavior. In addition, Study 3 
suggested that attitudes vary by intensity (e.g., abuse or addiction). Study 3 participants 
read two short vignettes describing the risky behaviors (e.g., suggesting abuse or 
adiction) of a fictional friend named John and how these behaviors affected him and his 
life (see Study 2, Table 15). Afterwards, participants rated specific substances or 
behaviors that could have caused the outcome listed on a scale of ‘1 = Not at all bad’ to 
‘10 - The absolute worst’ (see Figure 17). Specific substances and behaviors included 
exercise, marijuana, nicotine, gambling, alcohol, ecstasy, methamphetamine, and heroin. 
Data for cocaine was deleted from the final analysis due to an error during survey 
construction. Although cocaine abuse was included for participant rating, cocaine 
addiction was not.

To examine differences by intensity, two scales were constructed. The Abuse 
scale constructed from mean responses toward abuse, and the Addiction scale constructed 
from mean responses toward addiction. Paired t-tests of these scales, \(t(471) = -9.39, \)
\(p = .000\), indicated that the participants rated addiction (\(M = 7.49, SD = 1.62\)) as 
significantly worse than abuse (\(M = 7.13, SD = 1.60\)).
Figure 17. Study 3: Intensity - Abuse versus Addiction
The means for each type of substance/behavior were averaged across abuse and addiction in order to examine whether attitudes differed by type of substance/behavior while controlling for intensity (see Figure 18). The result showed that the mean response for exercise ($M = 4.4$) differed from the mean response for heroin ($M = 9.4$). In order to test for significant differences across type, without causing error from multiple comparisons, three paired comparisons represented the overall group. Pairs selected included the two substances having the lowest mean ratings (nicotine/marijuana), two substances having the highest mean ratings (heroin/methamphetamines), and the two process addictions (gambling/exercise). Results suggested that participants did not view nicotine abuse/addiction as significantly worse than marijuana abuse/addiction, $t(478) = .939, p = .348$, but did view heroin abuse/addiction as significantly worse than methamphetamine abuse/addiction, $t(477) = -2.338, p = .020$. In addition, gambling abuse/addiction was rated as significantly worse than exercise abuse/addiction, $t(477) = -23.642, p = .000$. These results supported that attitudes differ significantly across substance/behavior.

**Figure 18. Study 3: Type - Abuse or Addiction.**
Factor Analysis and Scale Development.

Factor analysis for Study 3 focused on item reduction to increase the practical use of the instrument and to improve survey reliability, followed by scale development. Pre-screening suggested non-normal data distribution due to excessive skew and kurtosis (e.g., > 1.00). Therefore, Principal Axis Factoring (PAF) rather than Principal Component Analysis (PCA) was used (Costello & Osborne, 2005). In addition, an overall α = .90 suggested that the data was likely to be correlated, making Direct Oblimin rotation a better choice than the more common Varimax rotation. The cut-off for item loading ranged from .35 to .40 with cross-loadings ranging from .20 of the loading level to a set level of .32 (Tabachnick & Fidell, 2007).

Initial exploratory factor analysis of all items using Eigenvalues greater than 1.0, failed to converge after 25 iterations. Failure to converge could have suggested significant problems with the structure of the data. However, it was more likely that the sample size was too small for the total number of variables (i.e., sample size = 488, items = 97; ~5:1 item to participant ratio). Attempts to address the lack of convergence included running the analysis using Principal Components Analysis with both Varimax and Direct Oblimin rotation (failed), Principal Axis Factoring with Varimax rotation (failed), allowing up to 100 iterations of the data, and deletions of items with low communalities (i.e., below .40) followed by additional PCA and PFA with both rotation types. Results included the following:

- Twenty-four factors converged after 64 iterations, explaining 64.8% of the variance. Eight items showed low communalities and were removed from the analysis.
- Twenty-one factors converged after 78 rotations, explaining 64.1% of the variance. Two items with low communalities were removed from the analysis.

- Twenty factors emerged after 79 iterations, explaining 63.6% of the variance. No items with communalities below .40.

After item removal, the PAF analysis was repeated, but without success. Again, 20 factors converged in 79 iterations, explaining 63.6% of the variance. No further items emerged with low communalities. However, a review of the 20 factors/constructs indicated that 15 of the factors had three or fewer items, 31 items failed to load on any factor and several cross-loaded on more than one variable.

Given these issues, subsequent factor analysis used fixed factors drive by the original addiction theories rather than as exploratory only. PAF analysis included the original data and those deleted due to low communalities, with five fixed factors commensurate with the five theoretical models of attitudes toward addiction. The resulting output explained 65.9% of the data and converged in 17 iterations. To increase inter-item consistency, the iterative process above for items with low communalities was repeated. Ten items with communalities below .400 were removed from the item pool after three iterations, even though this also reduced the explained variance to 63.6% (see Table 29).
Table 29

Study 3: Items Removed due to Low Communality

<table>
<thead>
<tr>
<th>Item</th>
<th>Communality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Addiction is the extreme end of a range of normal behavior</td>
<td>.342</td>
</tr>
<tr>
<td>Drinking is a social behavior; no one takes their first drink alone.</td>
<td>.343</td>
</tr>
<tr>
<td>In the U.S., drug use is almost acceptable.</td>
<td>.361</td>
</tr>
<tr>
<td>What causes addiction? Addiction results from a physical need.</td>
<td>.384</td>
</tr>
<tr>
<td>How much do you agree with this statement? How a person views life</td>
<td>.388</td>
</tr>
<tr>
<td>may determine whether they take risks that lead to addiction.</td>
<td></td>
</tr>
<tr>
<td>It is more important to educate people about how drugs harm the body</td>
<td>.393</td>
</tr>
<tr>
<td>than whether drug use is right or wrong.</td>
<td></td>
</tr>
<tr>
<td>Addiction is more common today than in the 1950s or 60s.</td>
<td>.395</td>
</tr>
<tr>
<td>There are people who have significant problems with alcohol, but who</td>
<td>.396</td>
</tr>
<tr>
<td>are not alcoholics.</td>
<td></td>
</tr>
<tr>
<td>Individuals engage in risky behaviors that might lead to addiction,</td>
<td>.398</td>
</tr>
<tr>
<td>because it is normal to want that feeling of being 'high' or intoxicated.</td>
<td></td>
</tr>
<tr>
<td>Some believe that drug use is influenced by what one learns about</td>
<td>.399</td>
</tr>
<tr>
<td>alcohol and drugs. How much do you agree or disagree with this</td>
<td></td>
</tr>
<tr>
<td>statement?</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>10</td>
</tr>
</tbody>
</table>

In general, item-loading levels were lower than expected, suggesting the existence of additional factors than the five forced during this study. Tabachnick and Fidell (2001, cited in Costello & Osborne, 2005), indicated that a minimum loading of .32 “equates to approximately 10% overlapping variance with the other items in that factor” and is an acceptable loading and cross-loading level (p. 4). Results of using this loading level were not as parsimonious as desired. Multiple combinations of loading, cross loading, and Cronbach alpha criteria followed to find the best combination of parsimony and high overall alpha (see Table 30). As a result, item loading cutoffs ranged from .35 to .40 with cross-loading cutoffs from .20 of the loading level to a set load of .32 (Tabachnick & Fidell, 2007). Scale Cronbach alphas ranged from $\alpha = 0.703$ for the Disease Scale to
α = 0.894 for the Moral Scale. Ultimately, 42 items were deleted from the item pool resulting in an instrument with 54 items.

Table 30

Study 3: Cronbach Alphas, Loading, and Cross-Loading Levels

<table>
<thead>
<tr>
<th>Scales</th>
<th>.40 loading and .20 cross-loading</th>
<th>.35 loading and .32 cross-loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor</td>
<td>Alpha (α)</td>
<td>Items</td>
</tr>
<tr>
<td>Psychology</td>
<td>0.869</td>
<td>15</td>
</tr>
<tr>
<td>Moral</td>
<td>0.894</td>
<td>16</td>
</tr>
<tr>
<td>Nature</td>
<td>0.832</td>
<td>10</td>
</tr>
<tr>
<td>Sociology</td>
<td>0.804</td>
<td>7</td>
</tr>
</tbody>
</table>

Five scales with 54 items resulted: Psychology Attitude Scale, Moral Attitude Scale, Nature Attitude Scale, Sociology Attitude Scale, and Disease Attitude Scale.

Those who endorse the Psychology Attitude Scale view substance use, abuse, and addiction as stemming from individual psychological, emotional, and mental health-related issues. Items within this scale suggest that dependence can occur in response to trauma, negative family situations, personal problems, unhappiness, and lack of self-confidence. These items also point to the ubiquity of addiction. More specifically, anyone can become an addict; one can be addicted to anything, and religion does not necessarily protect a person from this disorder.
Individuals who endorse the Moral Attitude Scale view addiction in ways that are much more stigmatizing than other scales. Addicts are failures who lack moral standards, immature people who lack the motivation to be successful in recovery, and as “low life people” who do not respect authority. Addiction is a choice and a “form of wrongdoing” that can be overcome by personal will power. Finally, those who endorse this view of addiction believe that describing addiction as a disease implies a lack of personal responsibility.

Those who endorse the Nature Attitude Scale hold a liberal view of substance use, abuse and addiction. These individuals support personal choice, use within their own home, and the right to use substances as long as no one else suffers. These individuals are more likely to support the legalization of marijuana, believe that people can use drugs without becoming addicted, and believe that use and dependence are not always negative.

Participants who endorse the Sociology Attitude Scale view addiction as caused by forces external to the individual. These believe personal environment, learning, and exposure to others’ attitudes about substance use, abuse, and addiction influence personal attitudes about addiction. Culture, religious beliefs, and the media also are sources of influence. In addition, these individuals believe that those who are reared in neighborhoods that “support” drug abuse will be more likely to use than those drug-free neighborhoods.

Finally, participants who endorse the Disease Attitude Scale are more likely to view addiction from the chronic disease perspective endorsed by the National Institute on Drug Abuse. These individuals believe that substance use changes the brain permanently in ways to “cause” addiction, and that there is no gray area between not having and
having an addiction. Addicts have no self-control over their abuse behaviors and incapable of solving their dependence without outside help. In addition, abstinence of addictive substances is essential for recovery. This includes the use of pain medication, because these substances contain opiates.

After scale development, subscale discriminant/divergent validity analysis examined the inter-scale correlations. This analysis ensures that each scale measures a separate construct by examining the correlation between the scales. For this analysis, the correlation cutoff was set at .32, which indicates that approximately 10% of the variance is shared (Tabachnick & Fidell, 2007). Using these criteria, Psychology and Sociology subscales were correlated at $R^2 = .32$ at the minimum acceptable level, suggesting that the scales are closely related (see Table 31).

Table 31

<table>
<thead>
<tr>
<th>Subscale Discriminant/Divergent Validity Correlation Matrix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychology</td>
</tr>
<tr>
<td>Psychology</td>
</tr>
<tr>
<td>Moral</td>
</tr>
<tr>
<td>Nature</td>
</tr>
<tr>
<td>Sociology</td>
</tr>
<tr>
<td>Disease</td>
</tr>
</tbody>
</table>

The resulting 54-item instrument (see the Pattern Matrix, Table 32, and Table C33, Appendix C) shows good internal scale consistency as evidenced by the alpha levels (see Table 30) and has a Flesch-Kincaid Reading Grade Level of 8.5 (e.g., eighth grade, fifth month). In addition, even though discriminant validity between the Psychology and
Sociology scales may not be as good as between the remaining scales, the overall subscale discriminant/divergent validity is acceptable (see Table 31). Finally, the instrument still requires confirmatory factor analysis with an additional sample of participants prior to use as a valid instrument assessing public attitudes about addiction.

Table 32

*Study 3: Pattern Matrix – Principal Axis Factoring, Oblimin Rotation, Five Fixed Factors*

<table>
<thead>
<tr>
<th>Pattern Matrix: Psychology Subscale</th>
<th>Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Traumatic events may lead to addiction.</td>
<td></td>
</tr>
<tr>
<td>An inability to gain pleasure from life may lead to addiction.</td>
<td></td>
</tr>
<tr>
<td>Individuals engage in risky behaviors that might lead to addiction, because they are depressed.</td>
<td></td>
</tr>
<tr>
<td>Addicts use to escape from bad family situations.</td>
<td></td>
</tr>
<tr>
<td>Individuals engage in risky behaviors that might lead to addiction, because they are avoiding personal problems.</td>
<td></td>
</tr>
<tr>
<td>An addict continues to use even when they know the cost of their behavior.</td>
<td></td>
</tr>
<tr>
<td>A person can be addicted to anything from drugs to video games.</td>
<td></td>
</tr>
<tr>
<td>Individuals engage in risky behaviors that might lead to addiction, because they lack self-confidence.</td>
<td></td>
</tr>
<tr>
<td>Individuals engage in risky behaviors that might lead to addiction, in order to feel better about themselves.</td>
<td></td>
</tr>
<tr>
<td>What causes addiction? Children who lack emotional support may choose to use drugs as an adult.</td>
<td></td>
</tr>
<tr>
<td>Even in religious communities, there are addicts.</td>
<td></td>
</tr>
<tr>
<td>Anyone can become an addict.</td>
<td></td>
</tr>
<tr>
<td>What causes addiction? Pain can cause addiction.</td>
<td></td>
</tr>
<tr>
<td>What causes addiction? Addiction is caused by unhappiness in a person's life, marriage, or job.</td>
<td></td>
</tr>
<tr>
<td>What causes addiction? The instant reward a person feels from certain behaviors leads to addiction.</td>
<td></td>
</tr>
</tbody>
</table>

Continued
### Table 32 Continued

**Study 3: Pattern Matrix – Principal Axis Factoring, Oblimin Rotation, Five Fixed Factors**

<table>
<thead>
<tr>
<th>Pattern Matrix: Moral and Nature Subscales</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
<th>Factor 4</th>
<th>Factor 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Addicts lack moral standards.</td>
<td>.751</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Addicts are low life people.</td>
<td>.681</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Addicts are failures.</td>
<td>.672</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Addicts are immature people.</td>
<td>.661</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Addicts have a carefree attitude towards life.</td>
<td>.611</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If an addict fails to recover in treatment, it is because they are not motivated to quit.</td>
<td>.600</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>You can tell a person is an addict by their appearance.</td>
<td></td>
<td>.575</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is easy to tell if someone has an addiction.</td>
<td></td>
<td>.566</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Addiction is best seen as a habit, not as a disease.</td>
<td></td>
<td>.565</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saying that addiction is a disease implies a lack of personal responsibility.</td>
<td></td>
<td>.564</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Addiction is a choice</td>
<td>.557</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is their own fault if an addict relapses.</td>
<td></td>
<td>.549</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individuals engage in risky behaviors that might lead to addiction, because they do not respect authority.</td>
<td></td>
<td>.546</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Addiction is a form of wrongdoing.</td>
<td>.537</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor people are less motivated to obey laws about risky behaviors like drug use.</td>
<td></td>
<td>.536</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Although addictive behavior is a choice, the person is influenced in that choice by their moral values.</td>
<td></td>
<td>.478</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily use of small amounts of substances like marijuana is not necessarily harmful.</td>
<td></td>
<td></td>
<td>.752</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marijuana is accepted in some communities, so there is nothing wrong with using it while there.</td>
<td></td>
<td></td>
<td>.714</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal use of drugs should be legal in the confines of one's own home.</td>
<td></td>
<td></td>
<td>.712</td>
<td></td>
<td></td>
</tr>
<tr>
<td>As long as no one else is harmed, people should have the right to engage in whatever behaviors they want.</td>
<td></td>
<td></td>
<td></td>
<td>.665</td>
<td></td>
</tr>
<tr>
<td>Some people use drugs, but never become addicted.</td>
<td></td>
<td></td>
<td></td>
<td>.536</td>
<td></td>
</tr>
<tr>
<td>Addiction does not always result in a negative outcome.</td>
<td></td>
<td></td>
<td></td>
<td>.513</td>
<td></td>
</tr>
<tr>
<td>People fail to consider that some addictive behaviors may be positive.</td>
<td></td>
<td></td>
<td></td>
<td>.498</td>
<td></td>
</tr>
<tr>
<td>People often outgrow drug and alcohol addiction.</td>
<td></td>
<td></td>
<td></td>
<td>.493</td>
<td></td>
</tr>
<tr>
<td>There are people who have significant problems with alcohol, but who are not alcoholics.</td>
<td></td>
<td></td>
<td></td>
<td>.435</td>
<td></td>
</tr>
<tr>
<td>Addicts can learn to control their use.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.425</td>
</tr>
</tbody>
</table>

Continued
Table 32 Continued

**Study 3: Pattern Matrix – Principal Axis Factoring, Oblimin Rotation, Five Fixed Factors**

<table>
<thead>
<tr>
<th>Pattern Matrix: Sociology and Disease Subscales</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
<th>Factor 4</th>
<th>Factor 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>What factors influence attitudes about addiction?</td>
<td>-0.660</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beliefs about addiction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What factors influence attitudes about addiction?</td>
<td>-0.595</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Religious beliefs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A person's culture influences their attitudes toward addiction.</td>
<td>-0.593</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What causes addiction? If a person's neighborhood supports drug use, a person is more likely to use drugs.</td>
<td>-0.593</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What factors influence attitudes about addiction? A person's environment</td>
<td>-0.592</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What factors influence attitudes about addiction? The media (e.g., news, television, movies, etc.)</td>
<td>-0.585</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Although risky behavior is a choice, the person is influenced in that choice by their upbringing and education.</td>
<td>-0.499</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Addicts cannot control their addictive behavior.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.433</td>
</tr>
<tr>
<td>Addicts cannot use pain medicine. They would become addicted to it.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.415</td>
</tr>
<tr>
<td>Addicts are not capable of solving their addiction on their own.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.402</td>
</tr>
<tr>
<td>What causes addiction? Genetics not psychology, determines whether one drinker will become addicted to alcohol and another will not.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.397</td>
</tr>
<tr>
<td>Drug use changes the brain after a few exposures and causes addiction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.382</td>
</tr>
<tr>
<td>‘Once an addict, always an addict’ is a true statement.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.348</td>
</tr>
</tbody>
</table>

**Scale Normality Assessment.**

Descriptive analysis assessed whether the scales met the four basic assumptions for linear regression: normal error distribution, linear relationship between the dependent variables (subscales) and the independent variables, mean of the probability distribution is zero, and homogeneity of variance. Normality Q-Q plots of the residuals indicated
normal error distribution across the Moral, Nature, and Disease subscales with minor deviation from normality in the Psychology and Sociology subscales (see Figures C19 – C23, Appendix C). Exploratory analysis showed minor negative skew in the Psychology (Skew = -.444), Sociology (Skew = -.884), and Disease (-.236) and Nature (Skew = -.065) subscales, with minor positive skew in the Moral (Skew = .058) subscale. In addition, minor Kurtosis was found in the Psychology (Kurtosis = .745), Moral (Kurtosis = -.160), Nature (Kurtosis = -.440), and Disease (Kurtosis = .058) subscales. Kurtosis in the Sociology subscale was more significant (Kurtosis = 1.594). In order to improve normality, the Psychology and Sociology Attitude scales were transformed (e.g., each scale was squared), and Q-Q plots were run again. This transformation reduced skew and kurtosis in both scales: Psychology (Skew = .001, Kurtosis = .057), Sociology (Skew = -.098, Kurtosis = -.135). In addition, there was visible improvement in the Q-Q normality plots (see Figures C24 & C25, Appendix C).

Scatter plots of the residuals versus predicted values indicated:

a) The scales meet the assumptions for linearity across the relationship between the dependent and independent variables

b) The mean of the errors equals zero in all cases

c) There is homogeneity of variance with approximately equal variance across the range of the predictors for all of the scales\(^5\) (see Figures C26 - C30, Appendix C).

Based on these findings, it was appropriate to use Ordinary Least Squares (OLS) regression to examine the relationship between the moderators and the scales (Mertler &

\(^5\) The Psychology scale did appear to have an outlier (see bottom right of the figure). Removal of this item did not improve the variance dispersion, so the item was left in the data pool.
Vannatta, 2005, p. 172). Finally, all subscales were re-coded to a 1-100 range for easier interpretation when used in regression analysis.

**Moderators of Attitudes toward Substance Use, Abuse, and Addiction.**

The last analyses in Study 3 included analysis of the moderators of attitudes toward addiction, followed by a general examination of this population’s responses on the instrument.\(^6\) Statistical analysis for this section included OLS regression using STATA Data Analysis and Statistical Software, Version 10, using the instrument scales (e.g., Psychology Attitude Scale (transformed version), Moral Attitude Scale, Nature Attitude Scale, Sociology Attitude Scale (transformed version), and Disease Attitude Scale as the dependent variables. The categorical demographic variables were dummy-coded with the reference category labeled as “1.” Continuous demographic variables such as age and income were re-coded to make intervals as consistent as possible. These demographic variables were the independent or predictor variables (see Tables C34 – C38, Appendix C). Finally, descriptive and multivariate analysis examined participant responses to the addiction attitude scales in general and by age and gender.

**Social Bias by Scale.**

First, OLS analysis assessed whether endorsement of the various scales would predict the level of social bias (see Table C40, Appendix C). Results indicated a significant relationship between Social Bias and the Sociology \((B = -.000, p = .005)\) and Nature \((B = -.008, p = .05)\) scales. Participants who endorse these scales are less likely to show evidence of social desirability bias.

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\(^6\) Note that these results are preliminary, as reliability and validity assessment of the instrument continues.
**Personal Experience as a Covariate.**

A primary rationale for this research was that extant surveys developed from individuals in treatment or treatment providers had limited generalizability to other populations. Although recruitment for this study was aimed at the “general public,” 26.5% \((n = 129)\) of those surveyed perceived themselves to have an addiction and 14.6% \((n = 71)\) had been in treatment, whether or not they also described themselves as having an addiction. One test of whether personal history of addiction or addiction treatment is problematic is to assess the degree to which self-perception as an addict or history of substance abuse treatment acts as a predictor for attitudes toward addiction.

OLS regression included the addiction attitude scales as the dependent variables (DV) and various demographic variables as the dependent variables (IV). In addition, two DVs were included reflecting self-perception as an addict, “Are you an addict,” and personal history of treatment, “Have you ever sought counseling for a substance abuse problem or participated in drug or alcohol abuse treatment.” Results indicated that these items are significant predictors of endorsement of the Moral Attitude scale. Participants who perceived themselves to be an addict \((B = -4.76, p = .004)\) or who had sought counseling in the past \((B = -4.60, p = .030)\) were significantly less likely to agree with items in the Moral Attitude Scale. In addition, participants who had sought counseling for substance abuse or addiction in the past \((B = 4.40, p = .046)\) were significantly more likely to endorse the Disease Attitude Scale. Neither self-perception as an addict nor history of substance abuse or addiction counseling, were predictors on the Psychology, Nature, or Sociology Attitude scales.
Demographic Variables as Predictors of Scale.

Significant predictors of the Psychology Attitude Scale\textsuperscript{7} included gender ($B = -471.55$, $p = .002$), age ($B = -15.27$, $p = .004$), race ($B = -1939.65$, $p = .040$), and ethnicity ($B = -924.76$, $p = .000$, see Figure C34, Appendix C). Males were significantly less likely than females to endorse addiction as a psychological issue. In addition, as age increased, endorsement for the scale decreased. Finally, American Indians/Alaskan Natives and Hispanics were significantly less likely than other minorities or non-Hispanics to endorse the Psychology Attitude Scale. Although significant, the representativeness of the race and ethnicity results should be taken with caution due to low sample size (American Indian/Alaskan Native, $n = 3$; Hispanic, $n = 41$).

Significant predictors of the Moral Attitude Scale (see Figure C35, Appendix C) included gender ($B = 6.13$, $p = .000$), age ($B = -0.222$, $p = .000$), the importance of religion to the individual ($B = 0.080$, $p = .004$), self-perception as an addict ($B = -4.76$, $p = .004$), and history of seeking substance abuse treatment or counseling ($B = -4.60$, $p = 0.030$). Males were significantly more likely than females to endorse addiction as a moral issue, while older participants were less likely than were younger participants to endorse the Moral Attitude scale. Those who indicated that having religion is important to them were more likely to endorse addiction as a moral issue, while those who described themselves as an addict or who had sought substance-related counseling in the past were significantly less likely to view addiction as a moral issue.

\textsuperscript{7} The unstandardized coefficients appear unusually large for the Psychology and Sociology Attitude scales, because the DV used were the transformed (squared) variables.
Significant predictors of the Nature Attitude scale included only gender ($B = 4.48$, $p = .006$) and the importance of having a religion ($B = -.060$, $p = .046$), although age approached significance as a predictor (see Figure C36, Appendix C). Males were significantly more likely to support the Nature Attitude scale than were females. In addition, those who considered having a religion to be important were significantly less likely to endorse the Nature Attitude scale.

Predictors of the Sociology Attitude Scale (see Figure C37, Appendix C) included age ($B = -17.19$, $p = .011$), race (Black: $B = -1929.03$, $p = .005$; Asian: $B = -1743.94$, $p = .044$), and education ($B = 151.45$, $p = .025$). Increasing age was associated with lower endorsement of this scale, while higher education was associated with higher endorsement. Black and Asian participants were significantly less likely to endorse the Sociology scale. However, the representativeness of the outcome for race should be approached with caution due to sample size (Black, $n = 31$; Asian, $n = 12$).

Only two predictors significantly predicted endorsement of the Disease Attitude Scale (see Figure C38, Appendix C): ethnicity ($B = 5.55$, $p = .039$) and the history of seeking counseling for substance abuse or addiction ($B = 4.40$, $p = .046$). Hispanic participants and those who had sought treatment in the past were significantly more likely to endorse the Disease Attitude Scale. However, as with previous race-related findings, the ethnicity association should be taken with caution due to the sample size ($n = 41$).

Variables that did not predict attitudes about addiction for any of the scales included whether participants lived in rural or urban Nevada, employment, marital status, and church attendance. Another interesting find, was that being White ($n = 504$) did not predict endorsement of the scales (see Table 39).
Political variables were not included in the regression analysis due to a possible confound between political and religious ideation and the dependent variables (e.g., the subscales). For this reason, analysis of the attitude scales and political affiliation was completed separately. A multivariate analysis of variance (MANOVA) indicated significant within group differences for the Moral, $F(3, 449) = 6.97, p = .000$, Nature, $F(3, 449) = 7.80, p = .000$, and Sociology subscales, $F(3, 449) = 5.23, p = .001$. Post hoc comparisons using the Scheffe test for multiple comparisons indicated that the mean for Republican participants on the Moral subscale ($M = 3.80, SD = .93$) was significantly higher than the mean for Democrat participants ($M = 3.24, SD = 1.06$). This suggested stronger endorsement for this scale in participants with Republican affiliation than in those with Democratic affiliation. Conversely, means for the Nature subscales indicated that participants with Republican affiliation ($M = 3.32, SD = 1.12$) were significantly lower than participants with Democrat affiliation ($M = 3.88, SD = 1.05$) or those with Independent affiliation ($M = 3.89, SD = 1.11$), and no significant differences were found between Democrats and Independents. This suggested that Republicans were significantly less likely to endorse the Nature model of addiction than were the Democrats or the Independents. Finally, participants with Independent political affiliation were significantly more likely to endorse the Sociology subscale ($M = 5.22, SD = .80$), than were Democrats ($M = 4.78, SD = 1.04$) or participants who were undecided about their political affiliation ($M = 4.79, SD = .98$). Political affiliation was not a significant predictor of the Psychology or Disease Attitude scales.
### Study 3: Moderators of Addiction Scales

<table>
<thead>
<tr>
<th>Demographic Variables (Predictors highlighted)</th>
<th>Psychology Attitude Scale</th>
<th>Moral Attitude Scale</th>
<th>Nature Attitude Scale</th>
<th>Sociology Attitude Scale</th>
<th>Disease Attitude Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B Coeff. P β</td>
<td>B Coeff. P β</td>
<td>B Coeff. P β</td>
<td>B Coeff. P β</td>
<td>B Coeff. P β</td>
</tr>
<tr>
<td>Male</td>
<td>-471.55 0.002 -0.16</td>
<td>6.13 0.000 0.20</td>
<td>4.48 0.006 0.14</td>
<td>-1.24 0.995 0.00</td>
<td>-1.66 0.290 -0.05</td>
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<tr>
<td>Rural</td>
<td>-71.40 0.673 -0.02</td>
<td>0.97 0.572 0.03</td>
<td>0.87 0.640 0.02</td>
<td>-1.15 0.996 0.00</td>
<td>1.14 0.526 0.03</td>
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<tr>
<td>Age</td>
<td>-15.27 0.004 -0.15</td>
<td>-0.22 0.000 -0.22</td>
<td>-0.11 0.062 -0.10</td>
<td>-17.19 0.011 -0.13</td>
<td>0.06 0.277 0.06</td>
</tr>
<tr>
<td>Employed</td>
<td>174.31 0.236 0.06</td>
<td>-2.49 0.097 -0.08</td>
<td>-0.20 0.900 -0.01</td>
<td>197.09 0.295 0.05</td>
<td>-0.09 0.952 0.00</td>
</tr>
<tr>
<td>Income</td>
<td>-40.18 0.147 -0.08</td>
<td>-0.04 0.885 -0.01</td>
<td>-0.03 0.933 0.00</td>
<td>-37.13 0.295 -0.06</td>
<td>-0.01 0.972 0.00</td>
</tr>
<tr>
<td>Married</td>
<td>14.51 0.928 0.00</td>
<td>2.51 0.126 0.08</td>
<td>-2.01 0.256 -0.06</td>
<td>328.73 0.110 0.09</td>
<td>2.94 0.085 0.10</td>
</tr>
<tr>
<td>Hispanic</td>
<td>-924.76 0.000 -0.18</td>
<td>-0.64 0.804 -0.01</td>
<td>0.39 0.888 0.01</td>
<td>-417.97 0.196 -0.06</td>
<td>5.55 0.039 0.10</td>
</tr>
<tr>
<td>White</td>
<td>-676.78 0.146 -0.16</td>
<td>-5.08 0.283 -0.12</td>
<td>3.09 0.547 0.07</td>
<td>-661.05 0.266 -0.12</td>
<td>4.06 0.410 0.09</td>
</tr>
<tr>
<td>Black</td>
<td>-496.24 0.357 -0.08</td>
<td>-4.54 0.407 -0.07</td>
<td>10.56 0.076 0.16</td>
<td>-1929.03 0.005 -0.25</td>
<td>9.81 0.086 0.16</td>
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<tr>
<td>Asian</td>
<td>-1016.04 0.133 -0.10</td>
<td>-0.88 0.898 -0.01</td>
<td>0.00 1.000 0.00</td>
<td>-1742.94 0.044 -0.13</td>
<td>8.12 0.257 0.08</td>
</tr>
<tr>
<td>American Indian, Alaskan Native, Pacific Islander, Hawaiian</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multi-racial</td>
<td>-314.46 0.835 -0.01</td>
<td>-14.44 0.347 -0.05</td>
<td>0.27 0.987 0.00</td>
<td>595.06 0.758 0.02</td>
<td>0.36 0.982 0.00</td>
</tr>
<tr>
<td>Education</td>
<td>-164.78 0.802 -0.02</td>
<td>-1.78 0.790 -0.02</td>
<td>4.03 0.578 0.04</td>
<td>-802.18 0.341 -0.06</td>
<td>-1.30 0.852 -0.01</td>
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<tr>
<td>Church</td>
<td>-26.84 0.611 -0.03</td>
<td>-0.92 0.089 -0.09</td>
<td>0.17 0.769 0.02</td>
<td>151.45 0.025 0.12</td>
<td>-0.68 0.222 -0.06</td>
</tr>
<tr>
<td>Attendance</td>
<td>-1.39 0.742 -0.02</td>
<td>-0.04 0.357 -0.05</td>
<td>-0.07 0.146 -0.09</td>
<td>7.40 0.169 0.08</td>
<td>-0.05 0.242 -0.07</td>
</tr>
<tr>
<td>Religious Importance</td>
<td>4.88 0.075 0.11</td>
<td>0.08 0.004 0.17</td>
<td>-0.06 0.046 -0.12</td>
<td>5.94 0.091 0.10</td>
<td>0.05 0.118 0.10</td>
</tr>
<tr>
<td>Addict</td>
<td>232.00 0.154 0.07</td>
<td>-4.76 0.004 -0.14</td>
<td>2.21 0.217 0.06</td>
<td>-121.62 0.559 -0.03</td>
<td>-1.70 0.325 -0.05</td>
</tr>
<tr>
<td>Treatment History</td>
<td>194.66 0.348 0.05</td>
<td>-4.60 0.030 -0.11</td>
<td>3.36 0.142 0.07</td>
<td>220.48 0.406 0.04</td>
<td>4.40 0.046 0.10</td>
</tr>
</tbody>
</table>
Participant Responses Using Preliminary Instrument.

Although preliminary, it was interesting to examine this sample’s attitudes toward addiction using the new addiction attitudes instrument, and to follow with a look at responses by two population parameters, gender and age. Descriptive analysis of the subscales sample indicated higher preference for the Psychological ($M = 5.6, SD = 0.67$) and Sociological ($M = 5.0, SD = 0.98$) models of addiction than for the other models. The models with the lowest support included the Nature ($M = 3.7, SD = 1.1$) and Moral ($M = 3.6, SD = 1.0$) models. Interestingly though, even these means are only slightly below the neutral point and show some level of endorsement (see Figure 31).

**Figure 31.** Study 3: Participant Mean Attitudes by Addiction Model

Multivariate analysis of participant responses to each scale by gender, indicated significant differences between male and female responses for the Psychology $F(1, 482)$
= 16.76, \( p = .000 \), Moral \( F (1, 482) = 6.43, p = .012 \), and Nature \( F (1, 482) = 5.42, p = .020 \) attitude scales. Specifically, women exhibited higher support than did men for the Psychological model of addiction, while men showed higher support than did women for the Moral and Nature models of addiction. No gender differences in attitudes were found for the Sociology \( F (1, 482) = 1.38, p = .241 \), or Disease \( F (1, 482) = 1.74, p = .188 \) models of addiction (see Figure 32).

**Figure 32.** Study 3: Participant Mean Attitudes by Gender

To clarify further the relationship between age and the models of addiction, age was divided into the three cohorts used in the National Survey on Drug Use and Health. These included young adults, age 18-25 years, middle adults, age 26-49 years, and older adults, age 50-80 years. The oldest designation stopped at 80 years of age as this was the upper limit of survey participants. Multivariate analysis (MANOVA) comparing age by
support for the models of addiction indicated significant between group differences for
the Psychology $F(2, 476) = 6.63, p = .001$, Moral $F(2, 476) = 3.82, p = .023$, and
Sociology $F(2, 476) = 3.58, p = .029$ scales. However, no group differences were noted
for the Nature $F(2, 476) = .45, p = .641$ or the Disease Scales $F(2, 476) = .93, p = .397$.

Post Hoc comparisons using the Scheffe test for multiple comparisons indicated
that the mean Psychology attitude scale score for participants in the 26-49 year age
bracket ($M = 5.72, SD = .69$) was significantly higher than participants aged 50-80 years
($M = 5.51, SD = .58, p = .004$; see Figure 33). All other cohort comparisons for the
Psychology attitude scale were non-significant. Likewise, the mean Moral attitude scale
score for younger participants aged 18-25 ($M = 3.98, SD = 1.09$) was significantly higher
than those aged 50-80 ($M = 3.50, SD = .94, p = .023$) and approached significance for
those age 26-49 ($M = 3.55, SD 1.11, p = .051$). Finally, participants aged 26-49 ($M =
5.10, SD = 1.00$) exhibited significantly higher endorsement of the Sociological model of
addiction than did those in the 50-80 age group ($M = 4.85, SD = .94, p = .030$), and all
other cohort comparisons were non-significant.
Figure 33. Study 3: Participant Mean Attitudes by Age
Chapter 6: Discussion

This research project consisted of three sequential studies, using a mixed-method research design with focus group and survey components. Each study provided the informational base for the subsequent study. In Study 1 (fall 2009 - spring 2010), a survey item pool and preliminary survey was constructed with the content mapped onto the five addiction theories (e.g., Psychology, Moral, Nature, Sociology, and Disease, see Table A1 for Study 1 Logic Model, Appendix A). Social Influence (Cialdini & Trost, 1998) and Social Learning/Cognitive theories (Bandura 1986, in Pajares, 2002) provided an understanding of the underlying beliefs that informed these models of addiction.

In Study 2 (summer 2010 – spring 2011), university students evaluated the preliminary survey and provided feedback important to item reduction and survey improvement. In addition, Study 2 participants tested a series of social distance measures focused on the research question: Is it possible to assess addiction attitudes as a universal construct irrespective of specific substances and/or behaviors of abuse? Study 2 ended with a more concise draft of the addiction attitude survey and preliminary data regarding the research question (see Table A2 for Study 2 Logic Model, Appendix A).

Finally, Study 3 (summer – fall 2011) focused on continued improvement of the preliminary survey using a sample of Nevada residents. Study 3 also examined the social psychological and demographic moderators associated with attitudes about addiction, and the relationship between attitudes about addiction, intensity of the issue, and the type of addictive substance or behavior (see Tables A3 – A4 for Study 3 Logic Models, Appendix A). Study 3 ended with a 54-item addiction attitude survey covering the five models of addiction. Scale analysis indicated strong inter-item reliability with Cronbach
alphas ranging from (.703 to .894) and acceptable subscale discriminant/divergent validity with inter-scale correlations at .32 or less.

This chapter includes a discussion of each study followed by an examination of how this project filled the research gaps in assessing public attitudes about addiction. Also presented are new findings in the area of addiction attitude research, with a review of the various addiction models and moderators of addiction attitudes. Also included is a discussion of the project implications for addiction theory, policy, and future addiction research. Finally reviewed are the initial proposal and deviations from the original proposal that occurred over the three studies.

**Study 1: General Overview**

The first study included development of a pool of 525 statements from public volunteer focus groups, existing surveys, and supplemental statements. These supplemental statements were included to ensure that all theoretical models of addiction were covered. Organization of these statements by addiction model followed, using a rubric developed to highlight addiction model criteria regarding addiction etiology, rationale for behavior, and prognosis for change (see Table 3, Appendix C). Next, removal of duplicate or otherwise redundant statements, and those with poor grammatical structure, reduced the pool to 240 statements.

Six of eight recruited experts in the fields of addiction and survey development, including four from the dissertation committee, reviewed the item pool and offer suggestions for modification. These six experts offered valuable feedback to reduce redundancy, improve item clarity, and improve coverage of the models of addiction. Their review was crucial to the success of the endeavor and resulted in the deletion of 94
items. Thus, through an iterative review process of expert review, modification, and deletion, the final item pool included 146 items covering the five models of addiction.

Loose organization of the final pool of addiction attitude items followed the questions asked of focus group members:

1) *What is addiction?*

2) *Why do people engage in risky behaviors that lead to addiction?*

3) *What causes addiction?*

4) *What factors influence attitudes about addiction?*

Items that did not fit cleanly into these four question areas moved into two additional categories: general statements about addiction, and the association between addiction, accountability, and personal responsibility.

The draft survey developed in Study 1 included the addiction-related items, vignettes to assess social distance, the Marlow Crowne Social Desirability Bias Scale (MC X2), and demographic variables. The MC X2 assessed participant level of biased responding in those who answered items from a ‘politically correct’ stance or who skewed responses to please the researcher. Due to the small sample size of Study 1, there was no social distance analysis of the addiction vignettes responses. However, participant conversation surrounding the vignettes was included in the item pool data. The Study 2 survey included the same vignettes in order to examine whether attitudes differed by substance or behavior of abuse. Demographic variables included items about religious affiliation and beliefs, political affiliation and beliefs, and personal experience with and exposure to substance use and addiction.
Study 2: General Overview

In Study 2, a sample of university students completed the preliminary survey with instructions to offer comments and suggestions in order to “help” in the development of an addiction attitude assessment. Two issues were significant for this study. First, over a quarter of students were deleted from analysis due to high social desirability responding (24%; \( n = 32 \)) or failing to answer the MC X2 scale items (1.5%; \( n = 2 \)). Such high rates of bias may be the norm with stigmatized topics such as addiction. Alternatively, it could be that students’ awareness that they were “helping” to complete a dissertation about addiction skewed their responses.

The second issue was that many of the students had personal experience with or personal exposure to substance use, abuse, and addiction. Exclusionary criteria for Study 1 participants included addiction or treatment history or related employment prior to the study. This helped to ensure that initial item development reflected public attitudes from a non-treatment population. Study 2 did not include this exclusion criteria as the focus of this study had shifted from item development to item reduction.

The objectives for Study 2 were to reduce instrument size and to assess whether participant attitudes differed by substance or behavior of abuse. Based on participant comments and statistical analyses, the final item pool consisted of 96 items. In addition to item reduction, two new vignettes replaced the Study 2 vignettes in order to investigate further the variability in participant responding across substances and behaviors of abuse and addiction while reducing participant cognitive load. Further discussion about this issue and the outcome is in the following section, “Intensity versus Type: Implications for Addiction Theory.” The “new” Study 3 survey included the 96 addiction items, the MC
X2 scale, 22 demographic items, 14 items related to experiences and personal history with addiction, and the 2 vignettes designed to test the issue of intensity versus type.

**Study 3: General Overview**

Initially, Study 3 was to include confirmatory factor analysis of the addiction attitudes survey using a representative sample of Nevada residents. However, the survey contained too many items to be of practical use, forcing a change in focus to include further item reduction. The outcome of this study was a 54-item instrument with five addiction subscales representing the psychological, moral, nature, sociological, and disease models of addiction. Individual subscales exhibited good internal reliability with strong Cronbach alphas, and acceptable subscale discriminant/divergent validity.

Study 3 participants who exhibited social desirability bias more than one standard deviation above the mean (19.6%; \( n = 118 \)) or who failed to complete the MC X2 scale (\( n = 1 \)) were deleted from further analysis. When compared to participants kept in the study, deleted participants had fewer years of education, were older, were more likely to be unemployed, had lower mean family income, were more likely to attend formal religious services, and rated higher the importance of having a religion.

Participant screen in Study 1 helped to ensure that survey item development used a non-treatment public population; thus increasing validity as a survey of public attitudes. Similar screening criteria for Study 2 and 3 participants was not necessary due to change in study focus. Instead, additional survey items gathered participant history of substance abuse or treatment. This information allowed for later testing of the association between participant attitudes and models of addiction.
Unexpectedly, deleted Study 3 participants reported less experience with addiction than those left in the study, were less likely to have sought treatment for addiction or attended a substance abuse support group. This suggested that participants having greater experience with addiction were more likely to answer questions in an unbiased manner than were those without such experience. However, in spite of reporting lower levels of addiction or treatment for addiction, deleted participants still reported using tobacco products (25.4%), using an illegal drug at least once (50%), and having driven a car after drinking (53.4%). In addition, 16.1% had attended a substance abuse support group, 6.8% had been in treatment, and 20.5% perceived themselves to be an addict. A majority (72.9%) knew someone whom they would describe as an addict, 61% had a family member who had used drugs, 29.7% had been arrested for illegal use, and 41.5% had a family member who had been arrested for driving while intoxicated.

**Addiction Models**

As previously indicated, development of the instrument consisted of three studies over the space of three years. The first study included both a ground-up, inductive approach with focus groups from the Reno and Las Vegas metropolitan areas, and a top-down, deductive approach with input from experts in the field of addiction and survey development. The inductive approach brought the public voice into the development process. The deductive approach ensured that the final product covered the five theoretical models of addiction: psychology, moral, nature, sociology, and disease. Finally, two social psychological theories informed and provided an understanding of items within each of the five subscales of addiction. These theories included Cialdini and

The Psychology Attitude Scale consists of 15 items that represent those who believe that substance use, abuse and addiction stem from psychological, emotional, and mental health-related issues (see Table 32 for a complete listing of these items). An example of an item from this scale would be that “Addicts use to escape from bad family situations.” Social Influence theory might help to understand the beliefs underlying this model of addiction through the theoretical components of social norms, identity and conformity. For example, individuals living within a social dynamic or group such as a family tend to follow the rules or norms of that group, because existence within the group builds self-esteem (Tajfel, 1978; Turner, 1975). While it is possible to leave social groups, it often is very difficult because one’s identity intertwines with the group identity. An individual in a “bad family situation” who cannot (or will not) leave the group, may resort to substance use as a passive form of leaving the situation while still maintaining their identity as a member of the group.

The Moral Attitude Scale includes 16 items that represent those who view addiction as a choice and a personal failure. The conformity component of Social Influence theory informs our understanding of beliefs within the moral model. For example, the belief that “Addicts lack moral standards,” may characterize the desire for accuracy and social harmony that comes from having a set of moral rules by which to live. Individuals who endorse this model of addiction may need to appear compliant, avoiding any perception of deviancy. By believing that addiction has a moral component
or is a character flaw, they ensure their own compliance with the rules and laws, and bring order to their universe.

The Nature Attitude Scale consists of 10 items that represent a more liberal view of substance use, abuse and addiction as personal choices that are not necessarily harmful. Social Learning theory informs this model of addiction through the idea that individuals have the ability to act upon and regulate their environment (Pajares, 2002). In addition, Social Learning theory proposes that individuals learn attitudes vicariously through our interactions with others within our environment. One item for example, “Marijuana is accepted in some communities, so there is nothing wrong with using it while there,” is a good example of attitudes that may be formed through association with others in a community, and an example of a belief in the right to choose one’s behaviors (even if illicit).

The Sociology Attitude Scale includes seven items that represent those who focus on external influences toward use, abuse, and addiction with the belief that these behaviors are learned and may be part of one’s cultural and social identity. Social Learning theory also provides an understanding of beliefs associated with this model for much the same reasons as cited above. For example, “A person’s culture influences their attitudes toward addiction,” suggests that our culture and association with others molds the values we choose as our own.

Finally, the Disease Attitude Scale consists of six items and represents the current scientifically based view of addiction from the chronic, genetic, brain-disease perspective. This model of addiction was the most difficult to associate with an underlying theory. However, both social psychological theories acknowledge the
importance of neurobiology and physiology found in the Disease model of addiction (Bandura, 2004).

Covering all models of addiction in the final survey scales was successful. However, difficulties exist with items in the Disease Model scale. Factor analysis revealed lower item loadings for this construct and higher cross-loadings than expected. Item loading levels under .500 suggested poor inter-item correlation, while higher cross-loadings suggested that the items were somewhat related to items within other scales. These issues may have occurred because of poor wording of the items or failure to include items that truly captured the model.

In spite of these issues, it was essential to include the Disease Model in the survey as this model represents the most recent information about the neurobiology of addiction. Research suggests that biological changes at the cellular level in the brain cause addiction, and that addiction is a chronic condition that alters individual motivation and behavior. This information has profound implications for prevention and treatment policies. In addition, understanding and acceptance of this model could reduce the stigma associated with addiction. In order to keep the lower-loading items in the survey, it was necessary to use less stringent loading and cross-loading criteria for this one scale. As a result, the resulting scale had fewer items ($n = 6$) and a lower alpha coefficient ($\alpha = .703$) than the other scales. In the early stages of factor analysis, several promising items were deleted that should have loaded on this construct (e.g., *Addiction is a disease*). Future work might include revisiting these deleted items to see if modification would improve their relationship to the existing items in the scale.
Intensity versus Type: Implications for Addiction Theory

A primary validity issue in the study of attitudes about addiction has been the problem of knowing an individual’s thoughts when hearing the term “addiction” or “addict.” What visual representations come to mind? Extant addiction attitude surveys stipulate specific substances of abuse, such as cocaine, alcohol, nicotine, or heroin, or dichotomize the issue of dependency into alcoholism and drug addiction. As such, these surveys focus individual thought toward the specific substance or behavior. However, the models of addiction arising out of recent research (Mosher & Akin, 2007) and the scientific studies of addiction in the past few years (Volkow, 2005; Volkow & Wise, 2005) have implied that some aspect of addiction exists as a universal construct, superseding the individual substance or behavior. No research tested the existence of this universal construct, or tested whether individual attitudes are consistent irrespective of the specific substance or behavior. In light of this issue, this study included the research question: Is it possible to assess addiction attitudes as a universal construct irrespective of specific substances and/or behaviors of abuse? In addition, it was hypothesized that

**H1:** Participant attitudes across the social distance attitudinal scales for substances or behaviors of addiction would not differ significantly from their attitudes on the generic “addiction” social distance scale.

Studies 1 and 2 used ratings of social distance to represent attitudes about abuse/addiction of various substances or behaviors. Participants read vignettes with a protagonist under the influence of various addictive substances and behaviors. In addition, one generic vignette used the variable “addiction” rather than a specific substance/behavior of abuse. Participant responses to the vignette items represented
social distance from the protagonist. The presumption was that social distance ratings would not differ across the substances or behaviors, or differ significantly from the “generic addiction” vignette, if participants perceived addiction as a universal construct. In contrast to the expected outcome, participant responses differed across the substances/behaviors and failed to support the existence of a universal construct called “addiction.” Rather, addiction appeared to be a complex construct with attitudes dependent upon the substance or behavior.

While the outcome answered the research question about a universal versus complex construct representing addiction, it also raised another question. Did the “type” of substance/behavior (e.g., alcohol use, marijuana use, cocaine use, etc.) or the “intensity” of the behavior (e.g., abuse or addiction) influence participant responses (or both)? For example, could individuals perceive “abuse” as a complex construct, while also viewing “addiction” as a universal construct? If so, would individual attitudes about substances or behaviors of abuse vary, while those of substance or behavioral addiction be consistent across the substances/behaviors?

Study 3 examined these questions using two vignettes that varied by intensity and type. Participants read vignettes where the protagonist suffered from the influence of either abuse or addiction from an unnamed risky behavior (e.g., substance or behavior). Then participants were provided a list of possible substances or behaviors underlying the protagonist’s plight, and were instructed to rate the items on a 10-point negativity scale. The intention was to examine whether participant ratings differed both across the two vignettes (intensity), and across the listed substances/behaviors (type).
Results supported Study 2’s outcome and did not support the hypothesis. Specifically, participants rated addiction as significantly worse than abuse, regardless of the substance or behavior. In addition, participant ratings of the specific substances/behaviors differed regardless of the intensity of use. Paired comparisons revealed no differences between ratings of nicotine and marijuana, but participants rated heroin as significantly worse than methamphetamine. Likewise, participants rated gambling as significantly worse than exercise.

These findings are intriguing and offer implications for addiction attitude theory. Current models of addiction differ in terms of abuse/addiction etiology, rationale for behavior, and prognosis for change. However, the models do not suggest that attitudes and beliefs differ based on the substance or behavior of abuse. If future research supports these findings, then inclusion of this information in the theories of addiction is necessary to highlight the complexity of attitudes toward addiction.

In addition to the above, further research should test the reliability of these findings and the construct validity of the instrument as a measure of public attitudes about addiction. Currently, items within the instrument refer to “addiction” rather than specific substances or behaviors of abuse. Therefore, participant responses could vary based on the substance or behavior they think of as they respond to each question. One possible solution would be to ask participants at the end of the survey to list the substances or behaviors they thought of as they took the survey. However, such retrospective data may be biased or erroneous. Another solution would be to prime participants with a specific substance or behavior of abuse prior to survey completion. However, this solution may defeat the objective of developing an instrument for
assessment of universal addiction attitudes. Finally, it could be that a prototype of addiction really does exist, but this research was not sophisticated enough to find it.

**Filling in the Research Gaps**

The primary purpose in the dissertation research was to develop a web-based addiction attitude instrument to improve our understanding of public attitudes toward substance use, abuse, and addiction. A review of extant instruments found four areas of difficulty: addiction as a universal construct, instrument/item consistency, coverage, and generalizability. Refer to the previous section for a review of the first issue of addiction as a universal construct.

The second instrument-related issue was one of consistency. Numerous addiction attitude instruments emerged in the past 20 years, but wording and scale variations have made it difficult to aggregate data for research purposes. In addition, these variations have brought into question the issue of construct generalizability and whether instrument A’s measure of a particular model mirrors the same constructs as instrument B. This project provided the first step in resolving that issue by developing a parsimonious addiction attitude instrument.

The third issue with existing instruments was one of coverage. There are multiple models of addiction, which vary regarding beliefs about etiology, personal responsibility, and potential for recovery. Current instruments have failed to cover the universe of these models. Thus, data from these instruments may have failed to represent accurately the attitudes of those surveyed. The addiction attitude instrument from this project does cover the current models of addiction and will provide a more accurate representation of individual beliefs about the issue of abuse and dependency. This may be the most
important success in this project. However, further work is required to test validity and reliability of the scales that measure these addiction attitudes.

The fourth issue was one of generalizability. Existing instruments were normed using participants in addiction treatment or treatment providers. As such, they may include language familiar to those populations but not to others. For example, individuals in treatment for substance dependence may understand terms such as “triggers, sobriety, recovery, and craving” differently than do those who have never been in treatment. This norming of an instrument using specialized populations may reduce the external validity of the instrument when used with other, non-specialized populations.

In an effort to understand “public” attitudes about addiction, it was imperative that instrument development include public participants. This project fulfilled the imperative through inclusion of a grounded approach with public samples in developing the item pool, and by using public samples during instrument development. Caveats were that the instrument used Nevada residents and that a large percentage of participants had been exposed to the issue of use, abuse, and dependency or labeled themselves as addicts. Use of Nevada residents during instrument development presented a limitation in external validity because Nevada residents may differ qualitatively from residents of other states. Further discussion of this issue is in Chapter 7 – Limitations and Future Directions.

The topic of this project might have been more interesting to participants with greater personal exposure to or experience with addiction, with such participants more likely to self-select into the studies. As a counter measure, items were included in the survey to gather information about individual level of exposure to and experience with addiction. This allowed further examination of the degree to which such exposure
influenced attitudes about abuse. The research suggested that those who perceive themselves as addicts or who have been in treatment are less likely to support a moral model of addiction, while those who have been in treatment are more likely to support a disease model of addiction. However, this finding alone does not constitute a limitation in external validity. Exclusionary screening for Study 1 participants included history of addiction, treatment for substance use, abuse, or addiction, and being a treatment provider. Thus, development of the item pool included precautions to protect future generalizability and to ensure that item content would be understandable to a non-treatment population.

**Addiction Attitudes and their Moderators**

The third objective of the study was to examine whether variables such as age, gender, education, ethnicity/race, religiosity and religious affiliation, political affiliation, and experience with substance use, abuse and addiction moderated participant attitudes about addiction. The literature review discussed these variables in terms of use and attitudes. For example, the literature indicates that age moderates attitudes and use, with more liberal attitudes and higher use found among younger adults.

Study 3 included four additional hypotheses that tested the moderating variables as predictors of the various models of addiction.

**H2:** Younger adults would be more likely than would be older adults to support a Nature model of addiction. Likewise, older adults would be more likely to support a Moral model of addiction.
**H3:** Females would be more likely to support the Psychological and Disease models of addiction, while males would be more likely to support the Moral model of addiction.

**H4:** Participants with personal history of substance use, abuse or addiction would be more likely to endorse the Disease and Moral models of addiction.

**H5:** Politically conservative or highly religious participants would be more likely to support the Moral model of addiction, while politically liberal or less religious participants would be more likely to support the Psychological or Sociological models of addiction.

Study 3 results did not support **H2.** Rather, age was a significant negative predictor for the Psychology, Moral and Sociology models of addiction, with model support decreasing as people age. Perhaps this association reflects the increased opportunity as one ages to encounter negative addiction experiences in one’s life. When the age range was divided into cohorts consisting of young adults (age 18-25), middle adults (age 26-49) and older adults (age 50-80), it was found that adults aged 26-49 showed higher support for the Psychology and Sociology models of addiction than did older adults, with no age-related differences in support for the Nature model. In addition, younger adults showed higher support for the Moral model of addiction than did the older adults. The outcome for younger adults may have been a reflection of their ‘Conventional’ stage of moral development, where individuals judge actions by rigid adherence to society’s rules (Feldman, 2008). Interestingly, this latter finding was counterintuitive, given that young adults are more likely to have learned about the science
of addiction through school-based education in health classes and school-based prevention programs.

Literature also suggested that attitudes about addiction differ by gender (Cirakoglu & Isin, 2005; Garlitz, 2007; Tonin, Burrow-Sanchez, Harrison, & Kircher, 2008). Garlitz (2007) noted that females were more likely than were males to support the Disease model and males were more likely to support the Moral model of addiction. Cirakoglu and Isin (2005) found that females were more likely than were males to support the Psychological models of addiction, while males again were more likely to support a moral model of addiction. Gendered support for specific models of addiction may make intuitive sense if males are acculturated to have a greater sense of individual agency for behavior (e.g., traditional gender roles), and females are taught to view behavior from a relational or communal viewpoint.

However, results from Study 3 only partially supported the H3 hypothesis predicted from this literature. Gender was a significant predictor of the Psychology, Moral and Nature models. Females were more likely to support the Psychological model of addiction, and males were more likely to support the Moral model of addiction. However, males also were more likely to support the Nature model of addiction, and gender was not a significant predictor for the Disease model. Possible explanation for male support of the Nature model of addiction follows that provided for the Moral model. Traditional male acculturation engenders a sense of agency and individualism, particularly within the males’ personal domain. The Nature model of addiction follows this belief system by purporting that individual behavioral choice is absolute, particularly within the individual’s own home. Finally, lack of gender as a moderator of the Disease
model may point to a more general lack of education across both males and females about the science of addiction.

Research has noted that experience with addiction or exposure to addiction may influence attitudes toward addiction (Abed & Neira-Munoz, 1990; Humphreys, Noke, & Moos, 1996; Martins et al, 2008; Moyers & Miller, 1993). Individuals having an addiction history and those with family members who were addicts endorsed the Disease and Moral models of addiction. As such, H4 predicted that participants with personal history of substance use, abuse or addiction would be more likely to endorse the Disease and Moral models of addiction.

Study 3 supported that individuals with a history of treatment for substance abuse/addiction were more likely to support the Disease Model. This is understandable given that treatment programs often teach the science of addiction as part of their program. However, participants who labeled themselves as addicts or who had a history of treatment were significantly less likely to support the Moral model of addiction. Lower endorsement for the Moral model of addiction and higher support for the Disease model in addicts also would support the objective of social identity in building self-esteem by allowing addicts to view themselves as having a chronic disease rather than a character flaw.

In the literature review, religiosity and political affiliation were found to be significant predictors of attitudes toward substance use, abuse, and addiction. Higher levels of religiosity were associated with more conservative beliefs and support for the Moral model (Stylianou, 2004). In addition, individuals with conservative political beliefs (e.g., Republicans) were more likely to support tenets of the Moral model, while
those with liberal political beliefs (e.g., Democrats or Independents) were more likely to support tenets of the Psychological and Sociological models of addiction (Patchell, 2005, Furnham & Thomson, 1996). As such, the last hypothesis, H4, predicted that politically conservative or highly religious participants would be more likely to support the Moral model of addiction, while politically liberal or less religious participants would be more likely to support the Psychological or Sociological models of addiction.

Study 3 supported this hypothesis. Of the three questions related to religious beliefs, one was a significant predictor of attitudes about addiction. The importance of having a religion was a significant positive predictor of the Moral model, which views addiction as a personal failure. In addition, religious importance was a significant negative predictor of the Nature model, which asserts that individuals have the right to make their own choices and that use is not necessarily harmful.

Also consistent with the literature and the hypothesis, Study 3 indicated that participants with conservative political affiliation (e.g., Republicans) were significantly more likely than were those with liberal affiliation (e.g., Democrats) to support the Moral model. In addition, participants with Democrat and Independent affiliation were significantly more likely than were Republicans to support the Nature model of addiction. However, contrary to the literature and hypothesis, participants with Independent affiliation were more likely than were Democrats or those who with undecided political affiliation to support the Sociological model. In addition, political affiliation was not a significant predictor of the Psychology model. These findings should be considered with caution as the association between “conservative and Republican” and “liberal, Democrat, and Independent” requires further testing.
Although hypotheses were not generated for education as a moderator of addiction, the literature did suggest that increases in education would predict more support for the Disease model (Broadus, Hartje, Roget, Cahoon, & Clinkinbeard, 2010), while individuals with lower education would be more likely to support the Moral model (Roget, Berry, Clinkinbeard, Hartje, Broadus, Larsen, & Skinstad, 2007). Study 3 failed to find such support. Instead, education was a significant predictor only of the Sociological model of addiction. This finding might suggest that the Sociological model of addiction is more complex than either the Moral or the Disease models, requiring higher education for full understanding. Alternatively, the previous support in the literature may have been an artifact related to the specific type of education (Broadus et al., 2010; Roget et al., 2007).

Although no initial hypotheses included race or ethnicity as moderators, results suggested that race and ethnicity could be significant predictors of attitudes about addiction. The Study 3 samples sizes for minority groups were small and replication with larger, more diverse samples would assess reliability of these findings. In all cases, being White was not a significant predictor of any of the models of addiction. In addition, these outcomes support the need for further research with special consideration to the influence of culture on addiction attitudes.

Finally, a general overview of Nevada participants’ responses indicated higher support for the Psychological and Sociological models of addiction, although there was some level of support (e.g., ratings were close to the neutral point or higher) for all of the models. What was most disturbing was that support for the Moral model of addiction was in the “Somewhat Disagree - Neither Agree nor Disagree” range with the highest
endorsement found in young adults, age 18-25. This suggests that prevention programs for younger people may have had the unintended effect of portraying addiction as a personal failure.

**Implications for Addiction-Related Policy & Decision Making**

The perception of addiction plays a substantive role in the development of associated governmental and criminal policies, including the allocation of resources for treatment and prevention. Perception also may be an important factor in jury decision-making when substance use is part of the crime. This section includes a brief discussion of the study’s implications for policy and decision-making.

Attitudes about addiction influence policy-decision making (Fisher, 2006; Gibeaut, 1997; Lee & Raskinski, 2006; ONDCP, 2007, 2011; Sweitzer, 1997). While outcomes from Study 3 were provisional, they also were provocative. Study 3 found that younger adults, males, and those with stronger religious beliefs were more likely to support punitive policies and laws as a reflection of their belief that addiction is a moral issue driven by choice. This latter finding regarding religious beliefs and endorsement of the moral model was consistent with previous research (Lee & Rasinski, 2006; Roget, Berry, Clinkinbeard, Hartje, Broadus, Larsen, & Skinstad, 2007; Stylianou, 2004). Males also would be more likely to support harm reduction policies, while those with stronger religious beliefs would oppose such policies. Older adults and those with higher education would be more likely to support addiction-related policies (e.g., prevention) that focus on sociological issues external to the individual such as neighborhoods, peer modeling, and poverty. Also consistent with previous research, Study 3 noted that females would be more likely to support policies that focus on individual psychological
issues in addiction such as trauma, depression, and other mental health problems (Cirakoglu & Isin, 2005). Finally, contrary to expectations and previous research (Furnham & Thomson, 1996; Patchell, 2005), political affiliation alone might not be a good predictor for addiction-related policies as it was not a predictor for the psychology or disease models. These findings suggest that decision-making policy groups should include a variety of individuals in order to reduce skew toward one set of attitudes or beliefs about addiction.

Attitudes about addiction also influence allocation of resources for treatment and prevention, although perhaps not as expected. If asked, individuals might assume that Democrats, because of their more liberal attitudes, would create policies directed toward treatment and prevention, and toward the amelioration of psychological and sociological issues that play a role in the etiology of addiction (Furnham & Thomson, 1996; Patchell, 2005). Alternatively, individuals might assume that Republicans who are more conservative would enact policy focused on interdiction and punishment, because of beliefs that addiction involves choice to use substances or engage in risky behaviors (Patchell, 2005). However, a review of the funding budgets during the Bush and Obama administrations indicate that allocation of funds and resources were similar. Moreover, statistical analysis indicated that political affiliation was not a consistent predictor of support for all models of addiction. This implies that other variables may be more important to these policy decisions than political affiliation alone. Further research is indicated to see if these outcomes are stable, to see if the findings are driven by other variables, and to develop a clearer picture of the relationship between these variables and the models of addiction.
The Proposal: Deviations from the path

In general, the methods for all three studies followed the initial 2009 proposal for this project with only minor deviations. This section lists the deviations by study, followed by rationale for the change.

Study 1:

Study 1 was to include four focus groups with 5-7 participants per group. Two of these were to be in Reno and two in Las Vegas. However, six groups were conducted with one interview \((n = 32)\), and of these, the majority (five groups) were conducted in Reno. Efforts to recruit 5-7 participants per group in Las Vegas were unsuccessful. Due to the cost of travel to Las Vegas and the inability to secure participants who would reliably show for the groups, recruitment refocused only in the Reno metropolitan area.

The expert panel in Study 1 was to include five members from the dissertation committee, the Center for the Application of Substance Abuse Technologies (CASAT), and faculty from other universities. Two faculty from other universities participated as well as the four dissertation committee members. However, all other recruitment attempts were unsuccessful.

Study 2:

The initial plan was to recruit a sample of 40 students to take the survey in Study 2. However, the recruitment for this study was so successful that 131 participants completed the survey.
Study 3:

Modification of the Study 3 methods included the use of two recruiting companies rather than one. This modification occurred when the first recruiting group, InfoUSA, failed to recruit the contracted number of participants within a reasonable amount of time. In another modification to the proposed methodology, the marketing companies recruited via email (including follow-up reminders) only rather than using postcards.

Modifications also occurred in the proposed Study 3 statistical analysis. First, the item loadings from factor analysis originally were set at .50 with no cross-loadings at or above .20. However, inter-item consistency was lower than expected, suggesting that the constructs may have been more complex than the fixed five-factor structure. In order to balance parsimony with the desire to cover all models of addiction, the loading criterion was reduced to a range of .35 to .40, and the cross-loading criterion was increased to a range of .20 to .32. Per Tabachnick and Fidell (2007), loading and cross-loading levels of .32 indicated a shared variance of no more than 10%. These lower loading and cross-loading levels were acceptable given the high Cronbach alphas in each of the resulting scales. (Of course, the high Cronbach alphas could be a result of the large number of items in some of the scales, rather than internal consistency.)

In the plan, the analysis would have included confirmatory factor analysis of the completed scales, followed by structural equation modeling to assess the fit of each scale in the model. Item reduction for Study 2, however, was not aggressive enough and the Study 3 survey was too large for analysis given the sample size. As a result, Study 3 statistical analysis included further item reduction using exploratory factor analysis, followed by scale development. In addition, only a web-based form of the survey was
used for Study 3, making it inappropriate to use the planned Multi-trait Multi-method (MTMM) analysis.
Chapter 7: Limitations and Implications for Future Research

Chapter 7 will discuss limitations of the study, followed by implications of the project for future research. Limitations to this study included low response rates, coverage error, use of recruitment companies, web-based surveys, lack of representativeness, poor external validity, poor item loading and measurement error, researcher error, and participant understanding of survey terminology.

Response and Coverage Error

Calculations for non-internet response rates from paper surveys include those invited to complete the survey versus those who actually responded to the invitation. However, calculation of web-based response rates may not be as simple. Eysenbach (2004) suggested that internet response rates should be composed of three separate response types: view rate, participation, and completion rates. Bowling, et al. (2006) added that calculation of web-based survey response rates must take into consideration the chance that participants fail to attain access to the surveys due to spam programs blocking email receipt or incompatibility between browsers and Internet Service Providers (ISPs). Given these difficulties, studies still reported response rates for web-based surveys ranging from 23.9% (Bowling, Rimer, Lyons, Golin, Frydman & Ribisl, 2006), to 38% (An, Hennrikus, Perry, Lein, Klatt, Farley et al, 2007) and 81% for participants who were pre-recruited (Crane, Daley, Barrow, Babbel, Beaty, Steiner, et al, 2008).

Study 3 response rates were low, even though the authors above predicted high response rates for web-based surveys. In addition, the response rate differed based on the company used. The survey remained open for seven weeks. During that time, InfoUSA
recruitment resulted in raw response rates (received/completes) of 3.9%, with completed rates (opens/completes) of 83.5%. The raw response rate for SSI (total invites/completes) was approximately 5.4%, while the completed response rate (opens/completes) was 80.2%. The low raw response rates indicate that few people who received the recruitment email opted to participate in the survey. This may have been due to the length of the survey. Longer surveys have been associated with lower start rates (Galesic & Bosnjak, 2009), and higher non-response (Yan, Conrad, Tourangeau, & Couper, 2010). For example, Hoerger (2010) noted a 2% dropout rate for every 100 items. The Study 3 survey had 159 items, including matrices, which require greater cognitive effort to complete. Of those who did open the survey, however, a large percentage completed it.

Non-response error, a primary problem caused by low response rates occurs when those who self-selected to participate are not representative of the population in general. As with all surveys, individuals who are willing to take the survey may differ from those who are not willing and this directly affects the generalizability of the survey results. Random survey sampling may improve non-response error. However, recruitment methods in Study 3 included participants who self-selected to join a marketing database (InfoUSA) or an online research panel database (SSI). These participants were paid for their participation either directly (InfoUSA), or through a point-payment system (SSI). In addition, those who participated through InfoUSA participated in a lottery with the possibility of greater compensation. Future efforts to improve this type of error may include use of multi-modal methods, including paper and telephone surveys (Dillman, Smythe, & Christian, 2009).
Use of the internet to conduct survey research has become more popular in recent years due to the ease of access to large, diverse samples, ability to download data directly into statistical analysis programs, and lower cost than traditional telephone and mail methods (Dillman, Smyth, & Christian, 2009). In addition, public use of and access to the internet has increased significantly in the last several years. In a report from Internet World Stats (2011), by 2010, 77.3% of the U.S. population was an internet user. This translates to almost 240 million people. In addition, Horrigan (2009) noted that 56% of individuals access the internet via wireless devices including cell phones, laptops and other mobile electronic devices, and 24% access the internet through non-wireless connections such as cable and dial-up. Of those owning a computer, only 6% reported no access to the internet.

However, concurrent with the increasing popularity of the internet as a medium for survey research is the rise in concern about the validity of information gathered from this medium. For example, according to the Pew Research Center (2011), 78% of the adults describing themselves as internet users are women, 79% are White, 67% are Black, and 78% are Hispanic. Possibly under-represented are males and other minority groups. In addition, rates of use decrease with age, increase with income and education, and is lower in rural than in urban populations. In sum, use of web-based surveys increases the potential for coverage error, because not all members of the population have the opportunity to participate in the study.

Gosling, Vazire, Srivastava, and John (2004) argued that, ”Internet samples are more representative than traditional samples with respect to gender, socioeconomic status, geographic location, and age and are about as representative as traditional samples
with respect to race” (p. 99). However, demographics for Study 3 were dissimilar from demographics of the resident population in Nevada. For example, when compared with the Nevada 2010 Census, the study sample had more participants living in rural Nevada, was more likely to be female and white, was less likely to be a minority, and was more educated. Although Gosling et al’s study indicated that internet samples might be more representative than traditional (non-web) samples; this sample for Study 3 was not.

Finally, even in those who elect to participate in the survey, there is the possibility of response bias due to the influence of injunctive norms leading to social desirability bias and stigma. These issues may not be completely solvable with the topic of addiction. However, for Studies 2 and 3, social desirability assessment eliminated those with the possibility of severely biased responses.

**External validity**

Although efforts were made to ensure external validity through stratified sampling procedures, Nevada residents may not be similar to individuals in other states within the continental United States. Therefore, using this population during instrument development could influence the validity of the instrument with other populations. Per the U.S. Census Bureau, Nevada population demographics differ from the U.S. in several areas including race/ethnicity, transientness, and college education. Nevada has higher percentages of White, Asian, American Indian, Native Hawaiian/Pacific Islander, Hispanic and Multiethnic population than in the U.S., and lower percentages of Black persons. As a corollary, Nevada also has a larger percentage of residences where languages spoken other than English.
Nevada has a larger transient population than found in the U.S. as a whole. This means that participants are more likely to hold descriptive and injunctive norms developed from living “somewhere else.” Whether or not this is a problem, depends upon the language, idioms and slang learned in these other social environments. Information previously learned might influence item interpretation by conferring unintended meaning.

Although not necessarily a limitation of the study, Nevada’s lower college education levels combined with higher levels of English as a second language also may influence understanding and interpretation of instrument items. All three studies were only in English. Thus, the survey did not include representation of non-English speaking individuals during development. Future recruitment efforts should focus on stratification by gender and location, as well as by race and ethnicity with survey versions in English and in Spanish.

**Poor Item Loading**

Item loadings in Study 3 were lower than expected suggesting problems with construct validity. An exploratory factor analysis of each scale suggested that items within the scale represent more than one construct, and may account for the loading issue. Thus, within the Psychology Attitude scale there may be constructs related to beliefs about causality, beliefs about responsibility, and beliefs about recovery. Structural equation modeling in a future study will examine this possibility.

**Researcher Error**

**Study 1.**

Study 1 included the use of focus group participants recruited in Washoe and Clark Counties. Recruitment efforts for this study, although extensive, were only
minimally successful and raised significant issues regarding representativeness. No Asian or Pacific Islander/Native Hawaiian participants volunteered to participate. In addition, the majority of participants were from the Reno metropolitan area as recruitment efforts in Las Vegas were largely unsuccessful. Upon traveling to Las Vegas for one group of volunteers, we found that the director of the Senior Center had coerced the seniors into participating. The seniors then refused to attend the scheduled group without notice. In response, the director advised that she had “recruited” four more for the day of our scheduled meeting. Although the researcher took responsibility for staff misunderstanding of the recruitment directions, irreparable damage occurred for future recruitment in that area.

Another recruitment issue occurred with the exclusion criteria. Although screening excluded participants by age and addiction history, screening did not include participant education level. As a result, one Reno focus group included a vocal, older adult with a doctoral degree and extensive knowledge about addiction in a group of participants with much less education and knowledge. Considering the stigma associated with addiction, participants may have been less likely to give their honest opinions in the presence of this adult.

Finally, procedures within the focus groups failed to include adequate backup in the case of electronic equipment failure. During a focus group with Reno seniors, no one noticed that the voice recorder turned off. Although an assistant attended and took notes, a wealth of information was lost. For future focus group research, it would be better to include a video/voice recorder with the desktop voice recorder. This would allow the
researcher to know which participant offered the comments, and would be back up the voice recorder.

**Study 2.**

For Study 2, I personally recruited participants in various classrooms around campus. During this recruitment, participants heard that this was “my” dissertation study. This information may have resulted in higher levels of social desirability bias in students who were motivated by “helping” the researcher rather than offering their true opinions on the topic. In the future, it would be better to ask a research assistant to help with the in-person recruiting and use a script that only speaks to the topic of research rather than the end goal of completing a dissertation.

Another error that occurred in Study 2 and in Study 3 was the miscoding of the Marlowe Crowne Social Desirability Scale. Surveymonkey.com routinely codes “yes” as a “1” and “no” as a “2” for dichotomous items. When writing the syntax to score this scale, I failed to notice this and coded “no” as a zero. As a result, SPSS counted all “no” responses as missing data. This error, repeated in Study 3, was not found until the end of Study 3 analysis. Even though it was possible to repeat the analysis for both studies, it was not possible to go back and change the survey developed in Study 2 and used for Study 3. Luckily, review of the reliability statistics for the Study 2 instrument indicated that the scales still had adequate alphas suggesting good inter-item consistency. The alphas, however, could have been even higher with the removal of one or two items. Better attention to detail is in order for future research. In addition, it would be wise to have another individual look over the analysis for such glaring errors.
Study 3.

Insufficient recruitment constituted a major limitation in Study 3, resulting in insufficient participants to run split-half reliability test, confirmatory factor analysis, or structural equation modeling. Power analysis for a population the size of Nevada residents indicated that a random sample of 600 participants was adequate to represent the Nevada population with a 4% error tolerance and 95% confidence level (“Sample size calculator,” 2010). In addition, the projected item pool size was approximately 60 items by Study 3. Thus, a sample size of approximately 600 would have provided a ratio of 10 participants for each item (10:1). Recruitment, therefore, was stopped when the sample reached \( n = 607 \). Unfortunately, this decision failed to consider sample size reduction due to missing data and high social desirability bias. The resulting ratio of items to participants (5:1) had insufficient power for the factor analysis. An additional study is now necessary to assess instrument reliability (via split-half reliability testing and confirmatory factor analysis), and to assess whether the five subscale model is the best fit to represent the theoretical constructs (via structural equation modeling).

Participant Understanding of the Terms

A possible limitation to the study lies in ascertaining whether participants understand the differences between substance/behavioral use, abuse, and dependency. Confusion between use, abuse, and dependency may undermine the objective of the instrument to assess attitudes about addiction. Efforts to overcome this limitation in future studies might include providing a definition of addiction at the beginning of the instrument.
Implications for Future Research

Outcomes from these studies were interesting and have implications for future research. First, further research must be done to test the survey’s validity and reliability. As indicated above, development of the survey in Study 3 did not include confirmatory factor analysis to assess the stability of the scales or structural equation modeling to test the overall model. In addition, the factor analysis in Study 3 required structure imposed upon the items (e.g., fixed factors) to complete the analysis. Constructs underlying these fixed factors could partially explain the difficulty in running the exploratory factor analysis. Now that scales development is completed and the instrument has fewer items, retesting with a new sample would provide information about inter-item consistency. Future research with an additional sample to assess survey reliability and validity is in order. This could include combining data from the next study with that from Study 3, followed by split half reliability assessment and confirmatory factor analysis. Confirmatory factor analysis (i.e., Structural Equation Modeling) would compare goodness of fit between the five-factor model presented in Study 3 and a more complex model involving subscales within each of the five theoretical models.

One specific issue with the instrument was the lower inter-item consistency in the Disease scale. A review of the items for this scale revealed that they seem to skirt the central tenets of the Disease model. These central tenets include:

- Addiction is a chronic brain disease whose etiology lies in the neural changes that occur from substance or behavioral abuse.
- These changes impair individual motivation and decision-making, and reduce the ability to make effective choices.
Addiction also is characterized by relapse. Future research may include adding items to the scale to obtain better and more accurate representation of the construct.

Other future research includes validation of the survey using samples from other States, specific demographic groups such as older adults, and minority populations. Preliminary results suggested that addiction attitudes differed by ethnicity and race. However, small sample sizes in Study 3 suggested caution in accepting the results. It is possible that the minority participants differed in some way from other minorities who declined to take the survey.

Once validated, use of the survey for further assessment of the moderators of addiction attitudes is important. This study only provided a titillating snapshot of the possible influence of these moderators on addiction attitudes. Further research also should assess the relationship between gender, age, education, religion, political affiliation, and addiction history on beliefs and attitudes about addiction.
Chapter 8: Conclusion

Using a series of three studies, this project met the objectives to develop an addiction attitudes survey for use in the general population, to test whether there is a universal construct called “addiction” that influences individual attitudes irrespective of the substance or behavior of abuse, and to complete a preliminary analysis of the moderators of addiction attitudes. Of these objectives, the most important was the development and initial validation of a new, parsimonious internet-based instrument for the assessment of public attitudes about addiction. This instrument is the first to include all of the current theories of addiction. The final 54-item survey consists of subscales representing the five models of addiction theory: Moral Model, Nature Model, Psychological Model, Sociological Model, and Disease Model. These models differ in beliefs about abuse and addiction etiology, rationale for behavior, and prognosis for change. Including all theories of addiction in one instrument allows the researcher to gain a more accurate and comprehensive picture of public attitudes about this important topic.

This web-based instrument is the first designed specifically to assess public, non-treatment attitudes, and was normed using this population. Survey development included an inductive, ground-up approach using focus group participants from the Las Vegas and Reno metropolitan areas. It also included a deductive, top-down approach with experts in the fields of survey development, attitudes, and addiction providing input in generating the survey item pool. Use of public participants in crucial development points should increase generalizability to other public samples. University students and a sample of Nevada residents tested the draft survey. Further validation and reliability testing is indicated, including confirmatory factor analysis with an additional sample.
Outcomes for the research question indicated no support for a universal construct called “addiction.” Rather, individual attitudes varied based on the substance or behavior of abuse, and differed between abuse and addiction. If this finding is accurate, it has important implications for assessing attitudes about substance or behavioral abuse and addiction. Additional research is indicated to examine support for these preliminary findings, and to discover appropriate survey modification to allow for continued evaluation of public attitudes about addiction in general.

Analysis of the moderators of attitudes about addiction suggested that gender, age, education, religious beliefs, political affiliation, and addiction treatment history might be important predictors of attitudes. More specifically, the study showed that these variables predict attitudes commensurate with the five models of addiction. For example, in spite of addiction prevention and education programs across Nevada, younger adult participants exhibited higher support for the moral model of addiction than did older adults, while mid-age adults exhibited higher support for the psychological and sociological models. Support for the psychological and sociological models may suggest an understanding of the complexity of addiction, yet support for the moral model predicts greater stigma and stereotyping toward those with addiction. Ethnicity and race also appeared to predict the models of addiction, even though sample sizes were small. As such, additional research with minority and under-served populations is important.

Finally, the importance of future research regarding attitudes toward addiction cannot be understated. Recently, NIDA’s Drug Policy Research Group was tasked with framing a U.S. Federal and International research agenda regarding use of legal psychoactive substances. Among others ideas, the task force endorsed understanding
public attitudes about substance use and addiction, and understanding the relationship between attitudes about addiction and the formation of public policy as critical gaps that need to be addressed (A. Ritter, Chairperson, Personal Communication, February 22, 2012). This dissertation provided the important initial steps in addressing those critical research gaps through the development of an addiction attitudes instrument that covers existing theories of addiction. In addition, future research using this instrument may help to uncover the relationship between public attitudes about addiction and the formation of related public policy.
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Appendix A: Study Logic Models

Table A1
Study 1 Logic Model

Inputs 1

- Focus Groups (FG)
- Researcher Additions (RA)
- Existing Instruments (ES)

Outputs 1

- Inputs
- Outputs
- Outcome

Item Pool:
- 525 Items
- FG: 77.5% (407)
- ES & RA: 22.5% (118)

Items Grouped by theoretical model

- Items ordered by Focus Group Questions

Item Pool:
- 240 Items

Deleted: duplicates, redundant items, items that did not make grammatical, or logical sense

- Bill, Evans, PhD reviewed;
  Deleted: duplicates & redundant items

- Deleted: Items that failed to show discriminant validity, were too obvious, or too vague

- Expert Panel (1):
  - G. Fisher, PhD
  - M. Piasecki, MD
  - D. Weigel, PhD
  - K. Kopera-Frye, PhD
  - Bill Evans, PhD
  - Remaining recruits did not respond

- Expert Panel (2):
  - Scott Akin, PhD
  - Clayton Mosher, PhD

Modified items:
- Reduced reading level
- Simplified items to reduce ambiguity
- Re-worded items to clarify & reduce grammatical issues
- Deleted: Items that were unclear, redundant or too simplistic

Outcome 1

- Output 2 & 3

Item Pool:
- 154 Items

Instrument Developed for Study 2: Form A & B
- 146 Items from Item Pool
- 10 item Marlowe Crowne Social Desirability Scale (MC X2)
- 20 demographic items, 14 addiction experience items
- 6 vignettes with 12 items each (Forms – gender varied)
- Space for participant comments added

Study 2
Table A2
Study 2 Logic Model

**Input**

- Study 2 Survey (Forms A & B):
  - 146 Items from Item Pool
  - 10 item Marlowe Crowne Social Desirability Scale (MC X2)
  - 20 demographic items
  - 14 addiction experience items
  - 6 vignettes with 12 items each (survey forms varied by gender)
    - addiction
    - marijuana
    - cocaine
    - alcohol
    - gambling
    - exercise
  - Space for participant comments added

- University of Nevada, Reno
  - Graduate/Undergraduate Students:
    - n = 131
      - Form A: n = 69, 52.7%
      - Form B: n = 62, 47.3%

**Output**

- Demographics:
  - Mean age = 23 yrs, SD 7.4
  - Female: 65.2%
  - White: 86.9%
  - Grade: Freshmen (33.7%), sophomores (7.6%), juniors (21.7%), seniors (29.3%), Graduate Students (7.6%)
  - Single: 80.4%
  - Not employed: 53%
  - Family income: 30.4% < $30K per year
  - Political preference: Democrat (34.1%), Republican (22.7%), Independent (20.5%), Undecided (22.7%)
  - Religion: None (27.9%), Roman Catholic (24.4%)

- Addiction Experience:
  - Over half of the participants had personal experience or knew someone with history of substance use
  - 11% described themselves as an addict

- Marlowe Crown Social Desirability Bias
  - Mean = 5.26, SD = .165
  - 32 Participants score > 1 SD above the mean
  - 2 Participants did not respond to bias items
  - Data for 34 participants removed with final n = 97
  - Analysis: Bias decreased with increase in education

- Factor Analysis:
  - PCA with varimax & oblimin
  - Failed to converge
  - Items ordered by theory, followed by Cronbach alpha
  - 32 items deleted
  - Alpha coefficients ranged from .69 (Disease) to .89 (Psychology)
  - Final item pool: 96 items

- Vignettes
  - Mean Social Distance differed significantly across items - Cannot tell is this is an issue of type of substance or intensity of behavior (abuse or addiction)
  - No significant differences by gender

- Participant Comments:
  - n = 182
  - 18 survey items deleted, 10 modified
  - Analysis: Bias decreased with increase in education

**Outcome**

- Survey for Study 3:
  - 96 addiction items
  - 10 items MC X2
  - 22 demographic items (added city/county)
  - 14 addiction experience items
  - 17 vignette items* -- by error, left out methamphetamine addiction

- Vignettes modified for Survey 3:
  - 2 vignettes with same fictitious person – John
  - 1 = Abuse, 1 = Addiction
  - Topics rated: heroin, cocaine, methamphetamine, alcohol, marijuana, nicotine, ecstasy, gambling, and exercise
  - Deleted 12 items per vignette and added a 10-item rating scale of 1 (Not at all bad) to 10 (The absolute worst)
Table A3
Study 3 Logic Model, Part 1

Input

Nevada Residents: Survey Sampling International (SSI)
- Recruited: 454
- Final n = 364

Nevada Residents: InfoUSA
- Recruited: 291
- Final n = 243

Survey for Study 3:
- 96 items
  - What is addiction (7)
  - Why do people engage in risky behaviors that lead to addiction (8)
  - What causes addiction (18)
  - What factors influence attitudes about addiction (5)
  - General statements about addiction (42)
  - Association between addiction, accountability and responsibility (16)
  - 10 items MC X2
  - 22 demographic items
  - 14 addiction experience items
  - 17 vignette items* -- by error, left out methamphetamine addiction

Output

90 SSI Participants deleted
- 47: Check ‘do not wish to participate’
- 2: Under 18 years of age
- 1: Not a Nevada resident
- 40: Completed <50% of the survey

48 InfoUSA Participants deleted
- 15: Check ‘do not wish to participate’
- 2: Failed to give an age
- 1: Not a Nevada resident
- 18: Completed <50% of the survey
- 12: Completed fewer than 5 items

Marlowe Crown Social Desirability Bias
- Mean = 5.84, SD = 1.83
- 118 (19.5%) Participants score > 1 SD above the mean
- 1 Participant did not respond to bias items
- Data for 119 participants removed
- Final sample size: 488

- Findings – Lower bias found
  - With increases in education
  - Black & Multiracial
  - History of attending substance abuse support group
  - History of substance abuse treatment

Demographics:
- Significant group-level differences
  - Rural vs. Urban – Higher rural/SSI; Higher Urban/InfoUSA
  - Age – InfoUSA/Older
  - 90% - no differences by group; Items combined for final analysis
- Mean age = 47 yrs
- Female: 60.2%, Urban: 77.5%
- White: 87.5%, Married: 49.5%
- Bachelor’s degree or higher: 34.9%
- Not employed: 53.3%
- Family income: $50K-$60K
- Political preference: Democrat (31.1%), Republican (28%), Independent (26.5%), Undecided (14.3%)
- Religion: None (15.6%), Roman Catholic (21.2%), non-denominational (13.6%)

Addiction Experience:
- 62.1% had used illegal drugs at least one time & 82% had known someone they would describe as an addict
- 26.5% described themselves as an addict
Table A4
Study 2 Logic Model, Part 2

<table>
<thead>
<tr>
<th>Input</th>
<th>Output</th>
<th>Outcome</th>
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</thead>
</table>
| Survey for Study 3:  
  - Vignette items: Intensity by Type  
  - 96 Addiction Items  
  - Final Sample n = 488 | Factor Analysis of Addiction Items  
  - Cronbach alpha all items - .90 (Data likely to be correlated, suggesting use of Oblimin rotation)  
  - Principal Component Analysis (PCA) with Varimax & Oblimin rotation: Failed to converge in 25 iteration  
  - Principal Axis Factoring (PAF) with Varimax & Oblimin rotation: Failed to converge in 25 iterations  
  - PAF with Oblimin rotation & 5 fixed factors. Converged in 17 iterations | Vignettes: Attitudes vary by intensity and type  
  - Intensity: 1-10 (Not bad – Worst)  
    - Abuse: M = 7.13, SD = 1.60  
    - Addiction: M = 7.49, SD = 1.62  
  - Type: 1-10 (Not bad – Worst)  
    - Nicotine = Marijuana, ns rating difference  
    - Heroin > Methamphetamine  
    - Gambling > Exercise |
| Items Deleted  
  - 10 items due to Commonalities < .400 | 5 Factors: Psychology, Moral, Sociological, Nature, Disease  
  - Factor loading minimum cutoff:  
    - .35: Disease factor items  
    - .40: Other factors  
  - Factor cross-loading cutoff  
    - .32: Disease factor items  
    - .20: Other factors | Final Survey  
  - 54 items  
  - 5 Scales  
    - Psychology: 15 items, α = .869  
    - Moral: 16 items, α = .894  
    - Sociological: 7 items, α = .804  
    - Nature: 10 items, α = .832  
    - Disease: 6 items, α = .703  
  - 42 items deleted  
  - Adequate discriminant validity: Inter-scale correlation ≤/.32 |

Scale Development using Cronbach alphas & Loading/Cross-loading cutoffs  
- 5 Scales  
  - Psychology: 15 items, α = .869  
  - Moral: 16 items, α = .894  
  - Sociological: 7 items, α = .804  
  - Nature: 10 items, α = .832  
  - Disease: 6 items, α = .703  
- 42 items deleted  
- Adequate discriminant validity: Inter-scale correlation ≤/.32
Appendix B: Focus Group Materials

Focus Group Screening Script.

Recruitment fliers will be posted throughout the community with a phone number and email address to contact Angela Broadus if interested in the study. This script begins at that call. When a potential participant calls, the person must be screened for eligibility.

Researcher: Hello, this is Angela Broadus, how may I help you?
Caller expresses interest in focus group participation.

Researcher: Great! Now first there are a few questions that I need to ask to see if you meet our focus group criteria. Do you have a few minutes to answer these? (Researcher asks questions.)
1. Have you ever had a history of addiction or substance abuse treatment? (Response must be ‘no’)
2. Have you ever had a history of employment in the addiction treatment or prevention field? (Response must be ‘no’)
3. Do you currently work in the addiction treatment or prevention field? (Response must be ‘no’)

(If caller answers yes to either question #1 or #2, skip to “If ineligible”)
4. Were you born prior to 1991? (Response must be ‘yes’)
5. Do you speak English fluently (Response must be ‘yes’)
6. Can you read and write in English (Response must be ‘yes’)

If ineligible: Thank you for your interest in our study, but you do not meet the study criteria for eligibility at this time. Have a great day.

If eligible: Thank you for your interest in our study. I will need to get your name and contact information so that I can put you on the focus group list. Once we get enough volunteers for a group, I’ll call you back with the time and location. I also will pay for bus fare to the group location if you do not have transportation.

(Researcher obtains contact information. If the lists are not full, thank the caller and advise them you will call back when the list has enough members to meet.)

Members needed for the Reno area:
1. 8-10 seniors over age 50
2. 8-10 females under age 50
3. 8-10 college students

Members needed for the Las Vegas area:
1. 8-10 over age 50
2. 8-10 under age 50

If the groups are full: Thank you for your interest in our study, but we have filled all of our groups at this time. Have a great day.

(If the list has sufficient numbers to meet, give the caller the location and time of the next group meeting.)

Reno focus group meetings will take place at:
  a. The Washoe County Senior Center, 1155 E. Ninth Street. One group will be held at this location: Seniors.
  b. The Northeast Community Center, 1301 Valley Road. Two groups will be held at this location: Female only and College students

Las Vegas focus group meetings will take place at:
  a. The Las Vegas Senior Center, 451 E. Bonanza Road, Las Vegas. One group will be held at this location: Seniors.
  b. The University of Nevada Cooperative Extension Agency at 8050 Paradise Road, Suite 100, Las Vegas. One group will be held at this location: Mixed gender under age 50.

Researcher: Now before I leave, let me tell you about our focus groups. A focus group is just a discussion between group members about a specific topic. My job will be to ask a few opening questions, encourage members to talk about their opinions and beliefs, and to provide some refreshments to thank you for your help.

You will be one of 8-10 members in the group and each group should last from 1-1.5 hrs. We will record the conversation on an audio recorder and another university student will write down your thoughts on a flipchart. That way, we will be able to remember what each of the group members offers to the conversation.

Do you have any questions? (If yes, respond to questions.)

We value your input. This information will help us to understand what individuals think and feel about addiction. You also will play a big part in helping us to build a survey instrument to see what other people think about addiction.

At the beginning of our focus group, I will go over our university consent procedures, group rules, and tell you more about what we will do with the data. I also will ask you to sign a paper stating you are consenting to help in this project. Have a great day and I’ll be back in touch with you soon.
Focus Group Moderator Script.


I. Welcome and Introduction

Good morning/afternoon/evening and welcome to our focus group session today. My name is Angela Broadus and I am a doctoral student at the University of Nevada, Reno. Assisting me today is another doctoral student from the university, Kristy Cahoon/Barbara Larsen.

II. Overview of the topic – Why are you here

We are here because we want to hear your opinions and beliefs about addiction. You were selected because you are an adult in this community and have no history of addiction, addiction treatment, or employment in either addiction treatment or prevention. Most previous researchers studying what people think about addiction have asked those who either are in addiction treatment or are providers of addiction treatment. We’re trying to change that and have invited you as members of the community to share your thoughts and ideas about substance abuse dependency or addiction. Your ideas will then help us to develop an addiction attitudes survey for other people in the community.

This is a completely voluntary group and should last between an hour and an hour and a half. There are no wrong answers, just differing opinions, and we ask that all respect the opinions and beliefs of others. Please feel free to share your views, even if they are different from others in the room. In fact, these differing views may be the most helpful.

III. Informed consent

Before we begin, let’s go over the informed consent forms that I gave each of you when you came in today. These forms are required by the university and provide you with an overview of the project, how it can benefit you, potential risks, and your rights as a group member to privacy and confidentiality. First, I will read aloud the consent form and then ask for questions. However, please stop me if you have a question before I have finished.

(Researcher reads consent forms)

Does anyone have any questions? (Answer questions)
Now I would ask that you re-read the consent form and then sign at the bottom. I have included an extra form so that you may have a copy for your records.
IV. Guidelines or ground rules

Now, let’s go over some ways to help make our discussion more productive. First, please speak up. As you see on the table *(Point to recorder)* and the flipchart, we will be recoding your conversation. As such, we need each of you to speak loudly enough for the recorder to pick up your comments. Also, only one person should speak at a time, and try to remember to state your fake name before you speak. *(For example, I might say… “Angela”…and this is what I think.)* I also will try to say your names aloud for the recorder. These names will not be used in our later reports so you can be assured of confidentiality.

Next, each of your opinions is important. You do not have to agree with others, but you must listen respectfully as others share their views.

My role here is to ask questions and listen. I won’t be participating in the conversation, but feel free to talk with one another. I’ll ask about 4 questions to begin with and help to move the discussion from question to question. Sometimes in these discussions, one person will have a lot to share while others won’t share as much. Because it is important to hear from everyone, I may ask the talkative member to let someone else share. Also, if you aren’t sharing much, I may ask for your opinion. If you are uncomfortable talking at that time, just say the word “pass” and I’ll move the discussion to someone else.

Now, let’s find out more about each other by going around the table. Tell us your favorite food and the best place to eat here in town. XXXX let’s start with you…

V. Opening question

That was great😊. Now, in front of each of you are pens and paper. On the top sheet is a list of four questions. Before we start talking, I’d like to give you some time to gather your thoughts and start thinking about addiction. If you will, please jot down answers to the four questions. *(Read them aloud)* I’ll give you a few minutes and when you are done, just put down the pen. That way I’ll know who is finished. *(Wait for all to finish)*

Now, let’s talk about the first question. *(Questions will be listed on the flip chart. Initiate discussion for each question. Assistant is to write down main ideas/abbreviated responses on flip chart)*

1. Name three words that describe an addict.
2. What is addiction?
3. What do you think causes addiction?
4. What do you think influences attitudes about addiction?
Prompts/Probes:

*If participants are echoing each other:*

Does anyone see it differently?
Are there any other points of view?
What about the rest of you?
We want to hear different points of view. Who has something that might be a bit different?

*If one member is talking too much:*

Thank you for your input XXXX. What do you (pick another person) think about this issue?

*If the response is confusing or needs clarification:*

Would you explain further?
Can you give me an example of what you mean?
Would you say more?
I don’t understand, tell me more about that.

*If there is silence (longer than 5-10 seconds)*

Tell me why there is no answer to this question.
There is no rush…take a second and think on this. When you are ready, tell us your thoughts.

*General prompts/probes:*

What experiences have you had to make you feel that way?
Tell me more.
I see you nodding your heads, tell me about it.

VI. Summarize the discussion

Summarize the main points using the flipchart. (Watch body signs of members to see if there is confusion or misunderstanding. If so, ask for clarification.)

Have we missed anything?
Does anyone have any questions?

Now before you leave, I would like to ask each of you to complete a short demographic survey that will tell us about the people who participated in our focus
groups. We will combine all of this information with no individual identifying information. This will help to maintain your privacy. As with our previous instructions, this survey is voluntary. You may complete it or not, and you may skip any question that makes you uncomfortable.

VII. Closing information

Thank you all for coming today. Before we leave, I want to be sure that you have your consent forms. Sometimes talking about subjects like addiction can make people feel uncomfortable. This is normal. However, if you are upset and think you need to talk with someone about it, I have put down contact information for local counseling:

- Reno Crisis Call Center: 775-784-8090
- Las Vegas Crisis Call Center: 800-273-8255

VIII. Moderator/Assistant Debriefing

1. Check tape recorder and ensure that it recorded the session.
2. What are the most important themes or ideas discussed?
3. Did these differ from what we expected? If so, how?
4. What points need to be included in the report?
5. What quotes should be remembered?
6. Should we do anything differently for the next focus group?
Focus Group Vignette Random Generator.

<table>
<thead>
<tr>
<th>Alcohol</th>
<th>Addiction(general)</th>
<th>Beh/Internet Porn</th>
<th>Beh/Gambling</th>
<th>Drug/Marijuana</th>
<th>Drug/Cocaine</th>
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<tbody>
<tr>
<td>2. ALMW</td>
<td>8. ADMW</td>
<td>14. BPMW</td>
<td>20. BGMW</td>
<td>26. AMMW</td>
<td>32. ACMW</td>
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<tr>
<td>3. ALMB</td>
<td>9. ADMB</td>
<td>15. BPMB</td>
<td>21. BGMB</td>
<td>27. AMMB</td>
<td>33. ACMB</td>
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<tr>
<td>4. ALFH</td>
<td>10. ADFH</td>
<td>16. BPFH</td>
<td>22. BGFH</td>
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<td>34. ACFH</td>
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<tr>
<td>5. ALFW</td>
<td>11. ADFW</td>
<td>17. BPFW</td>
<td>23. BGFW</td>
<td>29. AMFW</td>
<td>35. ACFW</td>
</tr>
<tr>
<td>6. ALFB</td>
<td>12. ADFB</td>
<td>18. BPFB</td>
<td>24. BGFB</td>
<td>30. AMFB</td>
<td>36. ACFB</td>
</tr>
</tbody>
</table>

Codes for assignment of gender, race/ethnicity, and issue: Random number generator for each packet

AC – Addiction/Cocaine FB – Female Black 1. 5 9 15 19 28 33
AD – Addiction (general) FH – Female Hispanic 2. 1 10 18 23 29 34
AL – Alcohol FW – Female White 3. 4 11 13 24 27 35
AM – Addiction/Marijuana MB – Male Black 4. 2 7 16 22 25 36
BG – Behavioral addiction/Gambling MH – Male Hispanic 5. 3 12 17 20 30 32
BP – Behavioral addiction/Pornography MW – Male White 6. 6 8 14 21 26 31

Six Vignette Packets

<table>
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<tr>
<th>Packet 1</th>
<th>Packet 2</th>
<th>Packet 3</th>
<th>Packet 4</th>
<th>Packet 5</th>
<th>Packet 6</th>
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<td>1. ALMH</td>
<td>4. ALFH</td>
<td>2. ALMW</td>
<td>3. ALMB</td>
<td>6. ALFB</td>
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<td>28. AMFH</td>
<td>29. AMFW</td>
<td>27. AMMB</td>
<td>25. AMMH</td>
<td>30. AMFB</td>
<td>26. AMMW</td>
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<tr>
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<td>34. ACFH</td>
<td>35. ACFW</td>
<td>36. ACFB</td>
<td>32. ACMW</td>
<td>31. ACMH</td>
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Focus Group: Sign-up List.

<table>
<thead>
<tr>
<th>#</th>
<th>NAME</th>
<th>CONTACT Phone OR Email Address</th>
<th>M/F</th>
<th>AGE</th>
<th>Bus Fare</th>
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Focus Group Participation Booklet.

*Completed prior to focus group.*

**Questions to Help You Focus**

1. Name three words that describe an addict.
2. What is addiction?
3. What do you think causes addiction?
4. What do you think influences attitudes about addiction?

---

1. Name three words that describe an addict.
   1) 
   2) 
   3) 
2. What is addiction?
3. What do you think causes addiction?
4. What do you think influences attitudes about addiction?
Survey Items: Completed after Focus Group.

Study 1 & 2: Vignettes (adapted from Link et al, 1999).

Vignettes varied by gender (replaced “Name” in each vignette and altered pronouns to fit) and substance/behavior of abuse. A sample of the vignette items follows all vignettes below:

Gender
- Mary, a white female
- Maria, an Hispanic female
- John, a Black male
- Juan, an Hispanic male

Substance/Behavior
- Addiction
- Alcohol
- Cocaine
- Marijuana
- Gambling
- Internet Pornography

Instructions

Read each vignette below and then answer the questions that follow.

Alcohol Addiction

A year ago, [Name] started to drink more than his/her usual amount of alcohol. In fact, during the last month [Name] noticed that s/he needed to drink twice as much as s/he used to in order to get the same effect, and sometimes s/he drinks every day for days at a time. Several times, s/he tried to cut down or stop drinking, but s/he couldn’t. Each time s/he tried to cut down, she became very agitated, sweaty and couldn’t sleep, so s/he would take another drink. [Name]’s family has complained that [Name] is often hung over, and has become unreliable—making plans one day and canceling them the next. When [Name]’s friends try to talk about the changes they see, [Name] becomes angry and storms out. [Name] lost his/her job a month ago after not showing up for work, but [Name] still continues to drink.
Drug Addiction (Cocaine or Marijuana)

A year ago, [Name] used cocaine/marijuana for the first time with friends at a party. During the last few months, [Name]’s use has increased until [Name] sometimes uses for several days at a time. [Name] has lost weight and often forgets to bathe. [Name] has spent his/her savings to buy the drugs. When [Name]’s friends try to talk about the changes they see, [Name] becomes angry and storms out. Friends and family have also noticed missing possessions and suspect [Name] stole them. [Name] has tried to stop using, but can't. Each time [Name] tries to stop, he/she feels very tired and depressed and is unable to sleep. [Name] lost his/her job a month ago after not showing up for work, but still continues his/her addictive behavior.

Behavioral Addiction (Gambling or Internet Pornography)

[Name]’s problem with internet pornography/gambling began about a year ago. During the first few months, [Name] only did the behavior about once or twice a week. However, in the past two months, the behavior has increased until sometimes [Name] engages in internet pornography/gambling for several days at a time without stopping. [Name] has lost weight, thinks constantly about when and where s/he can [get on the Internet/gamble] again, and has stopped seeing his/her friends and family. When [Name]’s friends try to talk about the changes they see, [Name] becomes angry and storms out. [Name] has tried to stop several times, but believes that s/he can't. Each time [Name] tries to stop s/he begins to feel very anxious and depressed and is unable to sleep. [Name] lost his/her job a month ago after not showing up for work, but still continues his/her addictive behavior.

Addiction (General concept)

[Name]’s problem with addiction began about a year ago. At first, [Name] got high every time, and believed that s/he had control over his/her decisions and behavior. Lately, though, it takes more and more to feel the same good feeling. [Name] has changed much of his/her life, and what s/he does every day, in a constant search for that high feeling s/he used to feel. [Name] thinks constantly about when and where s/he can get the high again and has stopped seeing his/her friends and family. [Name] has tried several times to stop, but can’t. When s/he does stop, s/he feels depressed and anxious. Sometimes, [Name] even feels physically sick. When his/her friends try to talk about the changes they see, [Name] becomes angry and storms out. [Name] lost his/her job a month ago after not showing up for work, but still continues his/her addictive behavior.
Demographic Questions

1. What is your gender?  
   - □ Male  □ Female

2. What is your age? ________ Years

3. Are you Hispanic or Latino/a?  
   - □ Yes  □ No

4. What is your race/ethnicity? (Please check one)
   - □ African American  □ American Indian/Alaska Native
   - □ Asian  □ Native Hawaiian/Pacific Islander
   - □ White  □ Multiethnic
   - □ Other (please specify) ________________________

5. What is the highest level of formal education you have earned?
   - □ Less than a High School Diploma
   - □ High School Diploma
   - □ Some College
   - □ Associate’s Degree
   - □ Bachelor’s Degree
   - □ Master’s Degree
   - □ Professional Degree
   - □ PhD

On a scale of 1 (Not at all) – 6 (Extremely), how likely would you be to…

- Feel ashamed if people knew someone like [Name] was a member of your family
- Be uncomfortable having a conversation with [Name]
- Be angry with [Name]
- Believe that [Name]’s behavior is controllable
- Feel sorry for [Name]
- Believe that [Name] would do something violent to other people
- Move next door to [Name]
- Spend an evening socializing with [Name]
- Avoid friendship with [Name]
- Start working closely with [Name]
- Have [Name] marry into your family
6. What is your current marital status?
- Single/Never Married
- Married
- Living as married
- Separated
- Divorced
- Widowed

7. Are you currently employed?  Yes  No
   If you answered yes, how many hours do you normally work in a week?

8. What was your household income this past year?
   - Under $20,000
   - $20,001 - $30,000
   - $30,001 - $40,000
   - $40,001 - $55,000
   - $55,001 - $70,000
   - $70,001 - $100,000
   - $100,001 - $150,000
   - Over $150,001
   - No response

9. After some focus groups, people report changes in their attitudes and opinions about the topic discussed, while others report no changes. We are interested in what you think about this focus group and whether the discussion changed your opinions about addiction. After each of the following statements, please circle “agree”, “disagree”, or “in the middle.”
   a. The focus group HELPED to change my opinion about addiction.
      1  2  3  4  5
      Disagree in the middle Agree
   b. The focus group WILL CAUSE me to behave more kindly to those with substance or behavior dependency.
      1  2  3  4  5
      Disagree in the middle Agree
   c. Because of this focus group, I want to learn more about addiction.
d. The focus group WILL HELP me to understand better individuals with addiction.

10. If the focus group discussion changed your opinion and beliefs about addiction, in what way were these opinions and beliefs changed?

11. What would you change about the Focus Group?

12. As you think back on your time in the Focus Group, what did you like best?

13. What did you like least about the Focus Group?

14. Do you have any other comments about the Focus Group?
## Appendix C: Studies 1 - 3

### Study 1: Rubric: Item Pool Development

<table>
<thead>
<tr>
<th>Model of Addiction</th>
<th>Etiology</th>
<th>Rationale for Behavior</th>
<th>Prognosis for Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nature</td>
<td>Individuals have an innate drive to alter consciousness. Use and risk taking is developmentally normal. Substance use is universal. Addiction represents an extreme of a natural behavior, and therapy should focus on harm reduction. Abstinence is an unrealistic goal.</td>
<td>Use behavior is a practical way to address the innate drive Substance use is not pathological or morally wrong</td>
<td>Not necessarily important as the behavior is natural - If change is desired, substitution of another risk-taking behavior is acceptable.</td>
</tr>
<tr>
<td>Biological, Genetic, Disease</td>
<td>Addiction is a chronic, progressive brain disease arising from drug-induced changes in the brain. Vulnerability toward addictive behavior can be inherited, genetically transmitted.</td>
<td>Behavior is driven by changes in the brain, resulting in craving and motivation toward continued use</td>
<td>Poor, relapse is common Abstinence is the only option for recovery</td>
</tr>
<tr>
<td>Moral, Choice</td>
<td>Addiction is a moral failing resulting from personal weakness, character defects Substance use is a choice.</td>
<td>Poor choice</td>
<td>Poor unless the individual makes a choice to change</td>
</tr>
<tr>
<td>Psychological</td>
<td>Addiction is a self-defeating, coping mechanism Result from low self-esteem Symptom of underlying personality characteristics.</td>
<td>Pathological behavior is learned and reinforced Addictive behaviors can be outgrown.</td>
<td>Good, if the therapy addresses the underlying negative issues Total abstinence is not necessary</td>
</tr>
<tr>
<td>Sociological</td>
<td>Underlying etiology is external to the individual, social or societal Etiological factors may include economic strain, social conflict, and social/cultural norms.</td>
<td>Environmental stressors result in loss of motivation to conform to normative behavior Attempting to achieve goals through deviant means, including substance use.</td>
<td>Poor unless external etiology is addressed.</td>
</tr>
</tbody>
</table>

Table C3
Table C8:

*Study 2 & 3: Marlowe-Crowne Social Desirability Scale (M-C2 10)* (Mandell, n.d.)

Listed below are a number of statements concerning personal attitudes and traits. Read each item and decide whether the statement is true or false as it pertains to you personally.

1. I never hesitate to go out of my way to help someone in trouble. (T)
2. I have never intensely disliked anyone. (T)
3. There have been times when I was quite jealous of the good fortune of others. (F)
4. I would never think of letting someone else be punished for my wrong doings. (T)
5. I sometimes feel resentful when I don’t get my way. (F)
6. There have been times when I felt like rebelling against people in authority even though I knew they were right. (F)
7. I am always courteous, even to people who are disagreeable. (T)
8. When I don’t know something I don’t at all mind admitting it. (T)
9. I can remember “playing sick” to get out of something. (F)
10. I am sometimes irritated by people who ask favors of me. (F)

**Scoring Algorithm**

For each answer the respondent provides that matches the response given above (i.e., T=T or F=F) assign a value of 1. For each discordant response (i.e., the respondent provides a T in place of an F or an F in place of a T) assign a value of 0. Total score can range from 10 (when all responses “match”) to 0 (when no responses “match”).
Figure C19. Study 3: Q-Q plot, Psychology Scale.
Figure C20. Study 3: Q-Q Plot, Moral Scale.

Figure C21. Study 3: Q-Q plot, Nature Scale.
Figure C22. Study 3: Q-Q plot, Sociology Scale

Figure C23. Study 3: Q-Q plot, Disease Scale
Figure C24. Study 3: Q-Q plot, Psychology Scale following transformation (squared variable).

Figure C25. Study 3: Q-Q plot, Sociology Scale following transformation (squared variable).
Figure C26. Study 3: Scatter plot: Psychology Scale.

Figure C27. Study 3: Scatter plot: Moral Scale.
Figure C28. Study 3: Scatter plot: Nature Scale.

Figure C29. Study 3: Scatter plot: Sociology Scale.
Figure C30. Study 3: Scatter plot: Disease Scale.
Table C33

Study 3: Provisional Final Instrument – Items Ordered by Subscale*

Psychology Theory Subscale

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Traumatic events may lead to addiction.</td>
</tr>
<tr>
<td>2.</td>
<td>An inability to gain pleasure from life may lead to addiction.</td>
</tr>
<tr>
<td>3.</td>
<td>Individuals engage in risky behaviors that might lead to addiction, because they are depressed.</td>
</tr>
<tr>
<td>4.</td>
<td>Addicts use to escape from bad family situations.</td>
</tr>
<tr>
<td>5.</td>
<td>Individuals engage in risky behaviors that might lead to addiction, because they are avoiding personal problems.</td>
</tr>
<tr>
<td>6.</td>
<td>An addict continues to use even when they know the cost of their behavior.</td>
</tr>
<tr>
<td>7.</td>
<td>A person can be addicted to anything from drugs to video games.</td>
</tr>
<tr>
<td>8.</td>
<td>Individuals engage in risky behaviors that might lead to addiction, because they lack self-confidence.</td>
</tr>
<tr>
<td>9.</td>
<td>Individuals engage in risky behaviors that might lead to addiction, in order to feel better about themselves.</td>
</tr>
<tr>
<td>10.</td>
<td>What causes addiction? Children who lack emotional support may choose to use drugs as an adult.</td>
</tr>
<tr>
<td>11.</td>
<td>Even in religious communities, there are addicts.</td>
</tr>
<tr>
<td>12.</td>
<td>Anyone can become an addict.</td>
</tr>
<tr>
<td>14.</td>
<td>What causes addiction? Addiction is caused by unhappiness in a person's life, marriage, or job.</td>
</tr>
<tr>
<td>15.</td>
<td>What causes addiction? The instant reward a person feels from certain behaviors leads to addiction.</td>
</tr>
</tbody>
</table>

Continued
Table C33 Continued

*Study 3: Provisional Final Instrument – Items Ordered by Subscale*

<table>
<thead>
<tr>
<th>Moral Theory Subscale</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Addicts lack moral standards.</td>
</tr>
<tr>
<td>2. Addicts are low life people.</td>
</tr>
<tr>
<td>3. Addicts are failures.</td>
</tr>
<tr>
<td>4. Addicts are immature people.</td>
</tr>
<tr>
<td>5. Addicts have a carefree attitude towards life.</td>
</tr>
<tr>
<td>6. If an addict fails to recover in treatment, it is because they are not motivated to quit.</td>
</tr>
<tr>
<td>7. You can tell a person is an addict by their appearance.</td>
</tr>
<tr>
<td>8. It is easy to tell if someone has an addiction.</td>
</tr>
<tr>
<td>9. Addiction is best seen as a habit, not as a disease.</td>
</tr>
<tr>
<td>10. Saying that addiction is a disease implies a lack of personal responsibility.</td>
</tr>
<tr>
<td>11. Addiction is a choice</td>
</tr>
<tr>
<td>12. It is their own fault if an addict relapses.</td>
</tr>
<tr>
<td>13. Individuals engage in risky behaviors that might lead to addiction, because they do not respect authority.</td>
</tr>
<tr>
<td>14. Addiction is a form of wrongdoing.</td>
</tr>
<tr>
<td>15. Poor people are less motivated to obey laws about risky behaviors like drug use.</td>
</tr>
<tr>
<td>16. Although addictive behavior is a choice, the person is influenced in that choice by their moral values.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nature Theory Subscale</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Daily use of small amounts of substances like marijuana is not necessarily harmful.</td>
</tr>
<tr>
<td>2. Marijuana is accepted in some communities, so there is nothing wrong with using it while there.</td>
</tr>
<tr>
<td>3. Personal use of drugs should be legal in the confines of one's own home.</td>
</tr>
<tr>
<td>4. As long as no one else is harmed, people should have the right to engage in whatever behaviors they want.</td>
</tr>
<tr>
<td>5. Some people use drugs, but never become addicted.</td>
</tr>
<tr>
<td>6. Addiction does not always result in a negative outcome.</td>
</tr>
<tr>
<td>7. People fail to consider that some addictive behaviors may be positive.</td>
</tr>
<tr>
<td>8. People often outgrow drug and alcohol addiction.</td>
</tr>
<tr>
<td>9. There are people who have significant problems with alcohol, but who are not alcoholics.</td>
</tr>
<tr>
<td>10. Addicts can learn to control their use.</td>
</tr>
</tbody>
</table>
Table C33 Continued

**Study 3: Provisional Final Instrument – Items Ordered by Subscale***

<table>
<thead>
<tr>
<th>Sociology Theory Subscale</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What factors influence attitudes about addiction? Beliefs about addiction</td>
</tr>
<tr>
<td>2. What factors influence attitudes about addiction? Religious beliefs</td>
</tr>
<tr>
<td>3. A person's culture influences their attitudes toward addiction.</td>
</tr>
<tr>
<td>4. What causes addiction? If a person's neighborhood supports drug use, a person is more likely to use drugs.</td>
</tr>
<tr>
<td>5. What factors influence attitudes about addiction? A person's environment</td>
</tr>
<tr>
<td>6. What factors influence attitudes about addiction? The media (e.g., news, television, movies, etc.)</td>
</tr>
<tr>
<td>7. Although risky behavior is a choice, the person is influenced in that choice by their upbringing and education.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Disease Theory Subscale</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Addicts cannot control their addictive behavior.</td>
</tr>
<tr>
<td>2. Addicts cannot use pain medicine. They would become addicted to it.</td>
</tr>
<tr>
<td>3. Addicts are not capable of solving their addiction on their own.</td>
</tr>
<tr>
<td>4. What causes addiction? Genetics not psychology, determines whether one drinker will become addicted to alcohol and another will not.</td>
</tr>
<tr>
<td>5. Drug use changes the brain after a few exposures and causes addiction</td>
</tr>
<tr>
<td>6. ‘Once an addict, always an addict’ is a true statement.</td>
</tr>
</tbody>
</table>

*Participants responses based on a 7-item scale: 1(Strongly Disagree), 2(Disagree), 3(Somewhat Disagree), 4(Neither Disagree nor Agree), 5(Somewhat Agree), 6(Agree), and 7(Strongly Agree).*
### Table C34

**Study 3: Ordinary Least Squares Regression – Psychology Subscale by Moderators**

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>(\beta)</th>
<th>Std. Error</th>
<th>(t)</th>
<th>(p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>-471.549</td>
<td>-.156</td>
<td>148.089</td>
<td>-3.18</td>
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</tr>
<tr>
<td>Rural</td>
<td>-71.401</td>
<td>-.021</td>
<td>168.926</td>
<td>-0.42</td>
<td>0.673</td>
</tr>
<tr>
<td>Age</td>
<td>-15.266</td>
<td>-.152</td>
<td>5.293</td>
<td>-2.88</td>
<td>0.000</td>
</tr>
<tr>
<td>Employed</td>
<td>174.313</td>
<td>.059</td>
<td>146.996</td>
<td>1.19</td>
<td>0.236</td>
</tr>
<tr>
<td>Income</td>
<td>-40.182</td>
<td>-.084</td>
<td>27.684</td>
<td>-1.45</td>
<td>0.147</td>
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<tr>
<td>Married</td>
<td>14.511</td>
<td>.005</td>
<td>160.374</td>
<td>0.09</td>
<td>0.928</td>
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<tr>
<td>Hispanic</td>
<td>-914.761</td>
<td>-.177</td>
<td>252.128</td>
<td>-3.67</td>
<td>0.000</td>
</tr>
<tr>
<td>White</td>
<td>-676.777</td>
<td>-.158</td>
<td>464.580</td>
<td>-1.46</td>
<td>0.146</td>
</tr>
<tr>
<td>Black</td>
<td>-496.240</td>
<td>-.081</td>
<td>538.296</td>
<td>-0.92</td>
<td>0.357</td>
</tr>
<tr>
<td>Asian</td>
<td>-1016.035</td>
<td>-.100</td>
<td>674.695</td>
<td>-1.51</td>
<td>0.133</td>
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<tr>
<td>American Indian/Alaskan</td>
<td>-1939.654</td>
<td>-.110</td>
<td>942.934</td>
<td>-2.06</td>
<td>0.040</td>
</tr>
<tr>
<td>Pacific Islander</td>
<td>-314.459</td>
<td>-.010</td>
<td>1508.253</td>
<td>-0.21</td>
<td>0.835</td>
</tr>
<tr>
<td>Multiracial</td>
<td>-164.783</td>
<td>-.016</td>
<td>657.923</td>
<td>-0.25</td>
<td>0.802</td>
</tr>
<tr>
<td>Higher Education</td>
<td>-26.835</td>
<td>-.026</td>
<td>52.736</td>
<td>-0.51</td>
<td>0.611</td>
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<tr>
<td>Church Attendance</td>
<td>-1.387</td>
<td>-.020</td>
<td>4.204</td>
<td>-0.33</td>
<td>0.742</td>
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<tr>
<td>Religious Importance</td>
<td>4.884</td>
<td>.107</td>
<td>2.738</td>
<td>1.78</td>
<td>0.075</td>
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<tr>
<td>Addict</td>
<td>232.998</td>
<td>.070</td>
<td>162.613</td>
<td>1.43</td>
<td>0.154</td>
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<tr>
<td>Addiction Treatment</td>
<td>194.656</td>
<td>.046</td>
<td>207.314</td>
<td>0.94</td>
<td>0.348</td>
</tr>
</tbody>
</table>

*Note: The unstandardized coefficients appear unusually large for the Psychology and Sociology Attitude scales, because the DV used were the transformed (squared) variables. In addition, for the relationship between the DV and dichotomous variables, the relationship is with respect to the non-listed variable. For example, with respect to females, males are significantly less likely to endorse the Psychology Attitude Scale. This finding is robust (Beta = -.16).*
<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>β</th>
<th>Std. Error</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>6.127</td>
<td>.199</td>
<td>1.507</td>
<td>4.06</td>
<td>0.000</td>
</tr>
<tr>
<td>Rural</td>
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<td>.027</td>
<td>1.719</td>
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<td>0.572</td>
</tr>
<tr>
<td>Age</td>
<td>-2.222</td>
<td>-.216</td>
<td>.054</td>
<td>-4.12</td>
<td>0.000</td>
</tr>
<tr>
<td>Employed</td>
<td>-2.490</td>
<td>-.083</td>
<td>1.496</td>
<td>-1.65</td>
<td>0.097</td>
</tr>
<tr>
<td>Income</td>
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<td>-.008</td>
<td>.282</td>
<td>-0.14</td>
<td>0.885</td>
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<tr>
<td>Married</td>
<td>2.506</td>
<td>.083</td>
<td>1.632</td>
<td>1.53</td>
<td>0.126</td>
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<td>Hispanic</td>
<td>-.638</td>
<td>-.012</td>
<td>2.566</td>
<td>-0.25</td>
<td>0.804</td>
</tr>
<tr>
<td>White</td>
<td>-5.083</td>
<td>-.116</td>
<td>4.729</td>
<td>-1.07</td>
<td>0.283</td>
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<tr>
<td>Black</td>
<td>-4.545</td>
<td>-.073</td>
<td>5.479</td>
<td>-.83</td>
<td>0.407</td>
</tr>
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<td>Asian</td>
<td>-.881</td>
<td>-.008</td>
<td>6.867</td>
<td>-0.13</td>
<td>0.898</td>
</tr>
<tr>
<td>American</td>
<td>-7.024</td>
<td>-.039</td>
<td>9.598</td>
<td>-.73</td>
<td>0.465</td>
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<td>Indian/Alaskan Native</td>
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<tr>
<td>Pacific Islander</td>
<td>-14.442</td>
<td>-.047</td>
<td>15.382</td>
<td>-0.94</td>
<td>0.347</td>
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<td>Multiracial</td>
<td>-1.782</td>
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<td>Higher</td>
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<td>.537</td>
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<td>Education</td>
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<td>Church</td>
<td>-.039</td>
<td>-.055</td>
<td>.043</td>
<td>-0.92</td>
<td>0.357</td>
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<tr>
<td>Religious Importance</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Addict</td>
<td>-4.762</td>
<td>-.140</td>
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<td>-2.88</td>
<td>0.004</td>
</tr>
<tr>
<td>Addiction</td>
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<td>-.107</td>
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<td>-2.18</td>
<td>0.030</td>
</tr>
<tr>
<td>Treatment History</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>β</td>
<td>Std. Error</td>
<td>t</td>
<td>p</td>
</tr>
<tr>
<td>------------------------------</td>
<td>-------</td>
<td>-----</td>
<td>------------</td>
<td>-------</td>
<td>---------</td>
</tr>
<tr>
<td>Male</td>
<td>4.481</td>
<td>.137</td>
<td>1.632</td>
<td>2.75</td>
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</tr>
<tr>
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<td>0.640</td>
</tr>
<tr>
<td>Age</td>
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<td>-.100</td>
<td>.058</td>
<td>-1.87</td>
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</tr>
<tr>
<td>Employed</td>
<td>-.204</td>
<td>-.006</td>
<td>1.620</td>
<td>-0.13</td>
<td>0.900</td>
</tr>
<tr>
<td>Income</td>
<td>-.026</td>
<td>-.005</td>
<td>.305</td>
<td>-0.08</td>
<td>0.933</td>
</tr>
<tr>
<td>Married</td>
<td>-2.008</td>
<td>-.063</td>
<td>1.767</td>
<td>-1.14</td>
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</tr>
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<td>0.888</td>
</tr>
<tr>
<td>White</td>
<td>3.087</td>
<td>.066</td>
<td>5.118</td>
<td>0.60</td>
<td>0.547</td>
</tr>
<tr>
<td>Black</td>
<td>10.562</td>
<td>.158</td>
<td>5.930</td>
<td>1.78</td>
<td>0.076</td>
</tr>
<tr>
<td>Asian</td>
<td>-.004</td>
<td>-.000</td>
<td>7.433</td>
<td>-0.00</td>
<td>1.000</td>
</tr>
<tr>
<td>American Indian/Alaskan Native</td>
<td>-4.237</td>
<td>-.022</td>
<td>10.389</td>
<td>-0.41</td>
<td>0.684</td>
</tr>
<tr>
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<td>.001</td>
<td>16.617</td>
<td>0.02</td>
<td>0.987</td>
</tr>
<tr>
<td>Multiracial</td>
<td>4.032</td>
<td>.036</td>
<td>7.249</td>
<td>0.56</td>
<td>0.578</td>
</tr>
<tr>
<td>Higher</td>
<td>.170</td>
<td>.015</td>
<td>.581</td>
<td>0.29</td>
<td>0.769</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Church</td>
<td>-.068</td>
<td>-.088</td>
<td>.046</td>
<td>-1.46</td>
<td>0.146</td>
</tr>
<tr>
<td>Religious Importance</td>
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<td>-.122</td>
<td>.030</td>
<td>-2.00</td>
<td>0.046</td>
</tr>
<tr>
<td>Addict</td>
<td>2.213</td>
<td>.061</td>
<td>1.792</td>
<td>1.24</td>
<td>0.217</td>
</tr>
<tr>
<td>Addiction Treatment History</td>
<td>3.363</td>
<td>.074</td>
<td>2.284</td>
<td>1.47</td>
<td>0.142</td>
</tr>
</tbody>
</table>
Table C37

Study 3: Ordinary Least Squares Regression – Sociology Attitude Subscale by Moderators

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>β</th>
<th>Std. Error</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>-1.237</td>
<td>-.000</td>
<td>189.361</td>
<td>-0.01</td>
<td>0.995</td>
</tr>
<tr>
<td>Rural</td>
<td>-1.147</td>
<td>-.000</td>
<td>216.006</td>
<td>-0.01</td>
<td>0.996</td>
</tr>
<tr>
<td>Age</td>
<td>-17.190</td>
<td>-.135</td>
<td>6.768</td>
<td>-2.54</td>
<td>0.011</td>
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<tr>
<td>Employed</td>
<td>197.097</td>
<td>.053</td>
<td>187.964</td>
<td>1.05</td>
<td>0.295</td>
</tr>
<tr>
<td>Income</td>
<td>-27.128</td>
<td>-.061</td>
<td>35.400</td>
<td>-1.05</td>
<td>0.295</td>
</tr>
<tr>
<td>Married</td>
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<td>.088</td>
<td>205.070</td>
<td>1.60</td>
<td>0.110</td>
</tr>
<tr>
<td>Hispanic</td>
<td>-417.967</td>
<td>-.063</td>
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<td>0.196</td>
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<tr>
<td>White</td>
<td>-661.051</td>
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<td>594.957</td>
<td>-1.11</td>
<td>0.266</td>
</tr>
<tr>
<td>Black</td>
<td>-1929.031</td>
<td>-.249</td>
<td>688.267</td>
<td>-2.80</td>
<td>0.005</td>
</tr>
<tr>
<td>Asian</td>
<td>-1742.939</td>
<td>-.135</td>
<td>862.731</td>
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<tr>
<td>American</td>
<td>131.167</td>
<td>.006</td>
<td>1205.729</td>
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<td>0.913</td>
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<tr>
<td>Indian/Alaskan Native Pacific Islander</td>
<td>595.056</td>
<td>.016</td>
<td>1928.6</td>
<td>0.31</td>
<td>0.758</td>
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<tr>
<td>Multiracial</td>
<td>-802.183</td>
<td>-.062</td>
<td>841.295</td>
<td>-0.95</td>
<td>0.341</td>
</tr>
<tr>
<td>Higher Education</td>
<td>151.451</td>
<td>.116</td>
<td>67.432</td>
<td>2.25</td>
<td>0.025</td>
</tr>
<tr>
<td>Church</td>
<td>7.404</td>
<td>.083</td>
<td>5.376</td>
<td>1.38</td>
<td>0.169</td>
</tr>
<tr>
<td>Religious</td>
<td>5.937</td>
<td>.103</td>
<td>3.502</td>
<td>1.70</td>
<td>0.091</td>
</tr>
<tr>
<td>Addict</td>
<td>-121.618</td>
<td>-.029</td>
<td>207.933</td>
<td>-0.58</td>
<td>0.559</td>
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<tr>
<td>Addiction</td>
<td>220.482</td>
<td>.042</td>
<td>265.093</td>
<td>0.83</td>
<td>0.406</td>
</tr>
</tbody>
</table>
Table C38

*Study 3: Ordinary Least Squares Regression – Disease Attitude Subscale by Moderators*

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>β</th>
<th>Std. Error</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>-1.663</td>
<td>-.054</td>
<td>1.570</td>
<td>-1.06</td>
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<td>.059</td>
<td>.056</td>
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<td>0.277</td>
</tr>
<tr>
<td>Employed</td>
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<td>-.003</td>
<td>1.559</td>
<td>-.06</td>
<td>0.952</td>
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<tr>
<td>Income</td>
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<td>-.002</td>
<td>.294</td>
<td>-0.03</td>
<td>0.972</td>
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<td>1.700</td>
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<td>5.545</td>
<td>.104</td>
<td>2.673</td>
<td>2.07</td>
<td>0.039</td>
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<tr>
<td>White</td>
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<td>.092</td>
<td>4.926</td>
<td>0.82</td>
<td>0.410</td>
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<td>Black</td>
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<td>.156</td>
<td>5.707</td>
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<td>.077</td>
<td>7.154</td>
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<td>American</td>
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<td>-.031</td>
<td>9.998</td>
<td>-0.56</td>
<td>0.579</td>
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<tr>
<td>Indian/Alaskan Native</td>
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<td>.001</td>
<td>15.992</td>
<td>0.02</td>
<td>0.982</td>
</tr>
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<td>Pacific Islander</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Multiracial</td>
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<td>-.012</td>
<td>6.976</td>
<td>-0.19</td>
<td>0.852</td>
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<td>-1.22</td>
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<td>-.072</td>
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<td>.097</td>
<td>.029</td>
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<td>0.118</td>
</tr>
<tr>
<td>Importance</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>1.724</td>
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<td>0.325</td>
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<td>.102</td>
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</table>

Table C40

*Study 3: Ordinary Least Squares Regression – Social Bias by Subscales*

<table>
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<tr>
<th></th>
<th>B</th>
<th>β</th>
<th>Std. Error</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychology</td>
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<td>.003</td>
<td>.000</td>
<td>0.07</td>
<td>0.947</td>
</tr>
<tr>
<td>Moral</td>
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<td>.077</td>
<td>.004</td>
<td>1.69</td>
<td>0.092</td>
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<tr>
<td>Sociology</td>
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<td>-.135</td>
<td>.000</td>
<td>-2.81</td>
<td>0.005</td>
</tr>
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<td>Nature</td>
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<td>-.092</td>
<td>.004</td>
<td>-1.96</td>
<td>0.050</td>
</tr>
<tr>
<td>Disease</td>
<td>.003</td>
<td>.038</td>
<td>.004</td>
<td>0.79</td>
<td>0.429</td>
</tr>
</tbody>
</table>
Appendix D: Study 3 Survey

Opening Script
You are being asked to participate in a study to assess the validity and reliability of an instrument being developed to examine public attitudes about addiction. The data from this study also will be analyzed to assess factors that might influence your attitudes, and how these attitudes may differ across various addictive behaviors.

The survey will take approximately 20-25 minutes and you will be asked to give us your opinions and beliefs about addiction, and your personal history with addictive substances or behaviors. In addition, we will provide you with a two brief stories about an individual with addiction, and ask you to rate the individual's addictive behavior. Finally, we will ask demographic questions about you.

Neither your name, computer IP address, nor any personal information that could identify you will be attached to the data. There are no mechanisms for linking survey responses to individuals. The information collected by the survey company is used to manage recruitment only and links you to the research, but not to your actual data. You will not be identified in any reports or publications that may result from this study and your name will not be attached to information you generate. You will not be asked to provide identifying information, (e.g., name or social security number), on the demographic questionnaire. In order to protect your identity, the web program will assign you a unique identification number. This number will only be used to separate one questionnaire from another, and will not include any information that could identify you.

The likelihood of risk associated with this study is expected to be minimal with the only principle risk being a breach of confidentiality. However, as indicated above, every effort will be made to secure the confidentiality of the information you provide. In spite of the minimal risk, some people may feel discomfort when disclosing personal history or sensitive information to others. Participation is voluntary. You may choose not to respond to questions or exit the survey at any time without negative consequences. You would only be removed from the study if the study was terminated or upon your request.

There may be no direct benefit to you as a participant in this study. However, your assistance will be valuable in developing an instrument to examine public attitudes about addiction.

SurveyMonkey.com servers record and collect incoming IP addresses for system administration and record keeping. These data are analyzed only in total; no connection is made between individual survey responses and IP addresses. SurveyMonkey.com may also use cookies to track usage behavior. If you are using a personal computer and wish to remove all cookies, obtain instructions for deleting cookies from the help menu or contact your Internet provider. If you are using a computer in a public domain, to limit access to your survey responses, close the Internet browser immediately after completing the survey.
Completed survey data will be stored on the researcher’s password-protected, secure computer and on the surveymonkey.com password-protected server file for a period of three years. Access to this computer and the surveymonkey.com results are limited to the listed researchers. If you have questions about this study, please contact Angela Broadus, at 775-784-6824, or William P. Evans, at 775-784-7013.

You may ask about your rights as a research subject or you may report (anonymously if you so choose) any comments, concerns, or complaints to the University of Nevada, Reno Social Behavioral Institutional Review Board, telephone number (775) 327-2368, or by addressing a letter to the Chair of the Board, c/o UNR Office of Human Research Protection, 205 Ross Hall / 331, University of Nevada, Reno, Reno, Nevada, 89557.

*Do you wish to participate in this study?
☐ Yes
☐ No

Before we begin, please answer the following question:

*Are you 18 years of age or older?
☐ Yes
☐ No

(*Note: Checking “No” to either question above skipped the participant to the end of the survey.)

We want to make sure that Nevadans’ opinions are represented in this survey. In order to do this, please provide the following information about where you live.

In what city or town do you live? ________________________________

In what Nevada County do you live? ________________________________
In this first section, think about how you would define addiction. Below are several statements that may help to answer the question, "What is addiction." For each statement, please indicate how much you agree or disagree from "strongly agree" to "strongly disagree."

**Addiction is…?**

<table>
<thead>
<tr>
<th>Definition</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Neither Disagree nor Agree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>a disease</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a choice</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>the extreme end of a range of normal behavior</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>best seen as a habit, not as a disease</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**A few more statements about the definition of addiction.**

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Neither Disagree nor Agree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Addiction is a form of wrongdoing.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>People can inherit a tendency toward addiction.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Certain substances or behaviors can change the brain so you don’t feel right without them.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
In this section, we have listed a number of reasons why people might engage in risky and potentially addictive behaviors like drug/alcohol use or gambling. For each statement below, please indicated the degree to which you agree or disagree.

**People engage in risky behaviors that lead to addiction...**

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Neither Disagree nor Agree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>because they do not respect authority.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>because they are avoiding personal problems.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>because they are depressed.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>in order to feel better about themselves.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Here are a few more questions about why people engage in risky behaviors. As before, tell us how much you agree or disagree with each statement.

**Why do people engage in risky behaviors that lead to addiction? (continued)**

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Neither Disagree nor Agree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>because they lack self-confidence.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>because it is normal to want that feeling of being ‘high’ or intoxicated.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>because they do not respect themselves.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
How much do you agree with this statement?

**How a person views life may determine whether they take risks that lead to addiction.**

- Strongly Disagree
- Disagree
- Somewhat Disagree
- Neither Disagree nor Agree
- Somewhat Agree
- Agree
- Strongly Agree

Now, let's switch gears a bit. In this section, ask yourself what causes addiction. For each statement below, please indicate the degree to which you agree.

**What causes addiction?**

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Neither Disagree nor Agree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ease access to drugs</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>The drinking/drug use patterns of one’s family and friends</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>A higher need for reward or pleasure</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>A lack of focus on personal needs</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Mental health problems</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>
Some believe that drug use is influenced by what one learns about alcohol and drugs. How much do you agree or disagree with this statement?

☐ Strongly Disagree  ☐ Disagree  ☐ Somewhat Disagree  ☐ Neither Disagree nor Agree  ☐ Somewhat Agree  ☐ Agree  ☐ Strongly Agree

Below are a few more questions about the causes of addiction. Tell us how much you agree or disagree with each statement.

**What causes addiction? (continued)**

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Neither Disagree nor Agree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Genetics not psychology, determines whether one drinker will become addicted to alcohol and another will not.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Addiction results from a physical need.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>People are more likely to use drugs if they are poor.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Recreational drug use leads to addiction.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Being in an unstable relationship may lead to addiction.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
The instant reward a person feels from certain behaviors leads to addiction.

This is the last set of question about the causes of addiction. You are doing great!

What causes addiction? (continued)

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Neither Disagree nor Agree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>• If a person’s neighborhood supports drug use, a person is more likely to use drugs.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>• Pain can cause addiction.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>• Peer pressure is a factor in drug abuse and addiction.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>• Role models can influence someone to use drugs</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>• Children who lack emotional support may choose to use drugs as an adult.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>• Addiction is caused by unhappiness in a person’s life, marriage, or job.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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</tr>
</tbody>
</table>
Okay... We've asked about the definition and causes of addiction. We've asked why people might engage in risky behaviors that could lead to addiction.

Now, in this section, we provide statements that ask about the factors that influence people's attitudes about addiction. For each statement, please indicate the degree to which you agree or disagree.

**What factors influence attitudes about addiction?**

<table>
<thead>
<tr>
<th>Factor</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Neither Disagree nor Agree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>The media (e.g., news, television, movies, etc.)</td>
<td></td>
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<tr>
<td>Beliefs about addiction</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>A person’s environment</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal experiences</td>
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<tr>
<td>Religious beliefs</td>
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</tbody>
</table>

Now let's change gears for a bit. Listed below are a number of statements concerning personal attitudes and traits.

**Read each item and decide whether the statement is true or false as it pertains to you personally.**

- I never hesitate to go out of my way to help someone in trouble.  
- I have never intensely disliked anyone.  
- There have been times when I was quite jealous of the good fortune of others.  
- I would never think of letting someone else be punished for my wrong doings.  
- I sometimes feel resentful when I don’t get my way.
Listed below are a few more statements concerning personal attitudes and traits.

Read each item and decide whether the statement is true or false as it pertains to you personally.

- There have been times when I felt like rebelling against people in authority even though I knew they were right.
- I am always courteous, even to people who are disagreeable.
- When I don’t know something, I don’t at all mind admitting it.
- I can remember “playing sick” to get out of something.
- I am sometimes irritated by people who ask favors of me.

In this section, we ask questions about your history with substance use, abuse, or addiction. These questions are very important to understanding YOUR attitudes about addiction. For this reason, we thank you in advance for your candor and honesty. Remember...this study is voluntary and you may choose not to answer any question that makes you uncomfortable.

Do you use tobacco products such as cigarettes, cigars, pipe, chewing tobacco, or snuff?
□ Yes
□ No

If you smoke, how many cigarettes do you smoke in an average day? __________

If you smoke, how many minutes after awakening in the morning before you smoke a cigarette? ____________________________________________

What is your personal history or experience with addiction?

- Have you ever, even once, used an illegal drug?
- Have you ever, even once, attended a substance abuse support group (For example, AA or NA)?
- Have you ever, even once, driven a car after drinking alcohol?
- Have you ever personally known someone that you would describe as an addict?
- Have you ever sought counseling for a substance abuse problem or participated in drug or alcohol abuse treatment?
What is your personal history or experience with addiction?

- Has anyone in your immediate family, or a close friend, ever used an illegal drug? [ ] True [ ] False
- Has anyone in your immediate family, or a close friend, received substance abuse treatment? [ ] True [ ] False
- Has anyone in your immediate family, or a close friend, been arrested for using illegal substances? [ ] True [ ] False
- Has anyone in your immediate family, or a close friend, been arrested for drinking and driving? [ ] True [ ] False

And finally...

Do you believe that you are an addict?
☐ No
☐ Yes

If you believe that you are an addict, to what are you addicted? _________________

For the next few pages, we have provided general statements about addiction with which you may agree or disagree. Read each statement and tell us what you think.

Addiction Attitude Statements (continued)

- Addicts are failures. [ ] Strongly Disagree [ ] Disagree [ ] Somewhat Disagree [ ] Neither Disagree nor Agree [ ] Somewhat Agree [ ] Agree [ ] Strongly Agree
- Addicts are low life people. [ ] Strongly Disagree [ ] Disagree [ ] Somewhat Disagree [ ] Neither Disagree nor Agree [ ] Somewhat Agree [ ] Agree [ ] Strongly Agree
- You can tell a person is an addict by their appearance. [ ] Strongly Disagree [ ] Disagree [ ] Somewhat Disagree [ ] Neither Disagree nor Agree [ ] Somewhat Agree [ ] Agree [ ] Strongly Agree
- Addicts lack moral standards. [ ] Strongly Disagree [ ] Disagree [ ] Somewhat Disagree [ ] Neither Disagree nor Agree [ ] Somewhat Agree [ ] Agree [ ] Strongly Agree
Continued…

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Neither Disagree nor Agree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

- It is easy to tell if someone has an addiction.
- Addicts are immature people.
- Addicts have a carefree attitude toward life.
- There is an addictive personality that can be seen as early as adolescence – even before the person starts using.
- Although addictive behavior is a choice, the person is influenced in that choice by their moral values.
To what degree do you agree or disagree with the following statements about addiction (continued)?

Addiction Attitude Statements (continued)

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Neither Disagree nor Agree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
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<tbody>
<tr>
<td></td>
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<tr>
<td>• The problem is not addiction; the problem is the illegal things that people do to get money for their habits.</td>
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<tr>
<td>• Addiction does not always result in a negative outcome.</td>
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<tr>
<td>• People often outgrow drug and alcohol addiction.</td>
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</tr>
<tr>
<td>• As long as no one else is harmed, people should have the right to engage in whatever behaviors they want.</td>
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<td>[ ]</td>
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<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
</tbody>
</table>
### Addiction Attitude Statements (continued)

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Neither Disagree nor Agree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>People fail to consider that some addictive behaviors may be positive.</strong></td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td><strong>Sexual problems may lead to addiction.</strong></td>
<td></td>
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</tr>
<tr>
<td><strong>An addict continues to use even when they know the cost of their behavior.</strong></td>
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</tr>
<tr>
<td><strong>Addiction is more common today than in the 1950’s or 60’s.</strong></td>
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</tr>
<tr>
<td><strong>Drinking is a social behavior; no one takes their first drink alone.</strong></td>
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</tr>
</tbody>
</table>
Keep going! You are almost through!

For each general statement about addiction below, tell us the degree to which you agree or disagree with the statement.

**Addiction Attitude Statements (continued)**

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Neither Disagree nor Agree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor people are less motivated to obey laws about risky behaviors like drug use.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Although risky behavior is a choice, the person is influenced in that choice by their upbringing and education.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>In the U.S., drug use is almost acceptable.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>It is more important to educate people about how drugs harm the body than whether drug use is right or wrong.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>A person’s culture influences their attitudes toward addiction.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Some types of addiction are more harmful than others.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
For the remainder of this survey, we are gathering important demographic information about you! Please read each question carefully.

**What is your gender?**

- [ ] Male
- [ ] Female
- [ ] Other, please specify____________________________________________________

**What is your age in years? (Example: 29) ________________________________**

**What is the highest level of formal education you have earned?**

- [ ] Less than high school
- [ ] High school diploma/GED
- [ ] Some college
- [ ] Associates Degree
- [ ] Bachelor’s Degree
- [ ] Master’s Degree
- [ ] PhD/MD
- [ ] Other Professional Degree
- [ ] Other (please specify) ___________________________________________________

**What is your current marital status?**

- [ ] Single/Never married
- [ ] Married
- [ ] Living as married
- [ ] Separated
- [ ] Divorced
- [ ] Widowed

**Are you Hispanic or Latino/a?**

- [ ] No
- [ ] Yes

**What is your race? (Check all that apply)**

- [ ] African American
- [ ] Asian
- [ ] White
- [ ] American Indian/Alaska Native
- [ ] Native Hawaiian/Pacific Islander
- [ ] Other
- [ ] Other (please specify) ___________________________________________________
For the next few pages think about the association between addiction, accountability, and personal responsibility. For each statement, indicate the degree to which you agree or disagree.

**Addiction, Accountability, and Personal Responsibility: What are the associations?**

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Neither Disagree nor Agree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal use of drugs should be legal in the confines of one’s own home.</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Saying that addiction is a disease implies a lack of personal responsibility.</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Addicts are not capable of solving their addiction on their own.</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>If you have the money to spend, then gambling is not hurting anyone.</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Some people use drugs, but never become addicted.</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>
Addiction, Accountability, and Personal Responsibility: What are the associations? (continued)

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Neither Disagree nor Agree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

- To be healed, addicted persons have to stop all addictive behaviors.
- Addicts cannot control their addictive behavior.
- The best way to overcome addiction is by relying on your own willpower.
- If an addict fails to recover in treatment, it is because they are not motivated to quit.
- It is their own fault if an addict relapses.
- If a person chooses not to try drugs, the issue of genetic tendency is not important.
Addiction, Accountability, and Personal Responsibility: What are the associations? (continued)

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Neither Disagree nor Agree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>You have to guide an addictive personality toward the right choices.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Daily use of small amounts of substances like marijuana is not necessarily harmful.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Addicts are capable of drinking or using socially.</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Addicts can learn to control their use.</td>
<td></td>
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<tr>
<td>Marijuana is accepted in some communities; so there is nothing wrong with using it while there.</td>
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</tbody>
</table>
The following questions are about John, a friend you’ve known for a long time. John participates in a risky behavior that could be harmful. You’ve hinted that his current problems with his girlfriend may be related to the risky behavior, but he says that he’s just having fun and to stop worrying.

Below is a matrix of possible risky behaviors that John might be doing. For each item, on a scale of 1 (Not at all bad) to 10 (The absolute worst) tell us how you would rate the behavior in terms of how “bad” it is.

<table>
<thead>
<tr>
<th>Behavior</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecstasy abuse</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Nicotine abuse</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Heroin abuse</td>
<td></td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marijuana abuse</td>
<td></td>
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<td></td>
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<tr>
<td>Alcohol abuse</td>
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<tr>
<td>Gambling abuse</td>
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<tr>
<td>Exercise abuse</td>
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<tr>
<td>Cocaine abuse</td>
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<tr>
<td>Methamphetamine abuse</td>
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</table>

The following questions are about John, a friend you’ve known for a long time. He has been engaging in a risky behavior. In the last few months, this has increased at an alarming rate. Now he’s doing it daily. In fact, he is always either doing the behavior or talking about it. The behavior is controlling his life and has ruined your friendship with John. You are now afraid for John, and told him that this behavior is going to kill him. John says he has tried, but cannot stop.

Below is a matrix of items covering the various risky behaviors that John might be doing. For each item, on a scale of 1 (Not at all bad) to 10 (The absolute worst) tell us how you would rank the behavior in terms of how “bad” it is.

<table>
<thead>
<tr>
<th>Behavior</th>
<th>1</th>
<th>2</th>
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<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
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<tbody>
<tr>
<td>Ecstasy addiction</td>
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<tr>
<td>Gambling addiction</td>
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<td>Nicotine addiction</td>
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<tr>
<td>Marijuana addiction</td>
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<td>Heroin addiction</td>
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<tr>
<td>Exercise addiction</td>
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<tr>
<td>Cocaine addiction</td>
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<tr>
<td>Methamphetamine addiction</td>
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<tr>
<td>Alcohol addiction</td>
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</tbody>
</table>

(Note: cocaine abuse was missed in the second vignette)
In the next three pages, we offer more general statements about addiction. Please let us know how much you agree or disagree with these statements

**Addiction Attitude Statements**

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Neither Disagree nor Agree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>A drinking or drug problem can only get worse.</td>
<td>[ ]</td>
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<td>[ ]</td>
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<tr>
<td>‘Once an addict, always and addict’ is a true statement.</td>
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<tr>
<td>Drug use changes the brain after a few exposures and causes addiction.</td>
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<tr>
<td>A person can be addicted to anything from drugs to video games.</td>
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<tr>
<td>Genetics can protect a person from becoming an addict.</td>
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<tr>
<td>Addicts’ brains react differently to drugs than do the brains of non-addicts.</td>
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</tbody>
</table>
General statements continued.

**Addiction Attitude Statements (continued)**

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Neither Disagree nor Agree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>An inability to gain pleasure from life may lead to addiction</td>
<td></td>
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<tr>
<td>Addicts use to escape from bad family situations.</td>
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<tr>
<td>Traumatic events may lead to addiction.</td>
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<tr>
<td>Some people have an addictive personality.</td>
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</tr>
<tr>
<td>People used to be more ashamed of drug addiction than they are today.</td>
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<tr>
<td>The aging baby boomer population is going to result in a large increase in elderly addicts.</td>
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</tbody>
</table>
This is the last set of general statements about addiction! Please tell us the degree to which you agree or disagree with these statements.

**Attitudes about Addiction.**

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Neither Disagree nor Agree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anyone can become an addict.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Addicts cannot use pain medicine. They would become addicted to it.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>There are no shades of gray; you are an addict or you are not.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>A person could be an addict, even if they have never used any drug.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>There are people who have significant problems with alcohol, but who are not alcoholics.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Even in religious communities, there are addicts.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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</tr>
</tbody>
</table>
Now, before we end the survey, we'd like to gather a bit more information about you. This information is very important in helping us to make sure that we are gathering opinions from a wide range of people. So...thank you in advance for your help!

What is your political preference?

☐ Independent
☐ Republican
☐ Democrat
☐ Undecided

☐ Other (please specify) ________________________________

Please indicated the ONE term that BEST DESCRIBES your political identity.

☐ Strongly Republican
☐ Moderately Republican
☐ Leaning Republican
☐ Independent
☐ Leaning Democrat
☐ Moderate Democrat
☐ Strongly Democrat

☐ Other (please specify) ________________________________
Please indicate the extent to which you agree with the following statements.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Neither Disagree nor Agree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Republicans are conservative in their beliefs about most issues.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Democrats are liberal in their beliefs about most issues.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Independents may be liberal or conservative depending on the issue.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Conservative beliefs are rooted in traditional values.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Individuals with liberal values are more open to change than those with conservative values.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

What was your family income this past year?

- ☐ Under $20,000
- ☐ $20,001 - $30,000
- ☐ $30,001 - $40,000
- ☐ $40,001 - $50,000
- ☐ $50,001 - $60,000
- ☐ $60,001 - $70,000
- ☐ $70,001 - $80,000
- ☐ $80,001 - $90,000
- ☐ $90,001 - $100,000
- ☐ $100,001 - $150,000
- ☐ More than $150,001
- ☐ Prefer not to respond

Are you currently employed

- ☐ No
- ☐ Yes
If you are employed, how many hours do you normally work in a week?  

With what religious family do you most closely identify? (Religious denominations are in the drop-down box.) (Gallup: The Baylor Religion Survey)

- Adventist
- African Methodist
- Anabaptist
- Assemblies of God
- Baha’i
- Baptist
- Bible Church
- Brethren
- Buddhist
- Catholic/Roman Catholic
- Chinese Folk Religion
- Christian & Missionary Alliance
- Christian Reformed
- Christian Science
- Church of Christ
- Church of God
- Church of the Nazarene
- Congregational
- Disciples of Christ
- Episcopal/Anglican
- Hindu
- Holiness
- Jehovah’s Witnesses
- Jewish
- Latter-Day Saints
- Lutheran
- Mennonite
- Methodist
- Muslim
- Orthodox (Eastern, Russian, Greek)
- Pentecostal
- Presbyterian
- Quaker/Friends
- Reformed Church of America/
- Dutch Reformed
- Salvation Army
- Seventh-day Adventist
- Unitarian Universalist
- United Church of Christ
- Non-denominational Christian
- No Religion
- Other (Please specify)
- Don’t Know

How often do you usually attend formal religious or spiritual services:
- More than once a week
- About once a week
- 1 to 3 times a week
- Less than once a month
- Never

How important to you is having a religion?
- 1 Not at all important
- 2.
- 3.
- 4. Neither Important nor Unimportant
- 5.
- 6.
- 7. Extremely Important

Thank you for your interest in our survey.