11-30-2010

Attitudes about Addiction: A National Study of Addiction Educators

Angela D. Broadus
University of Nevada

Joyce A. Hartje
University of Nevada

Nancy A. Roget
University of Nevada

Kristy L. Cahoon
University of Nevada

Samantha S. Clinkinbeard
University of Nebraska at Omaha, sclinkinbeard@unomaha.edu

Recommended Citation

Broadus, A.D., Hartje, J.A., Roget, N.A., Cahoon, K.L., & Clinkinbeard, S.S. (2010). Attitudes about addition: A national study of addictions educators. Journal of Drug Education, 40(3), 281-298. https://doi.org/10.2190/DE.40.3.e

ATTITUDES ABOUT ADDICTION: A NATIONAL STUDY OF ADDICTION EDUCATORS*

ANGELA D. BROADUS JOYCE A. HARTJE NANCY A. ROGET KRISTY L. CAHOON
University of Nevada, Reno
SAMANTHA S. CLINKINBEARD
University of Nebraska at Omaha

ABSTRACT

The following study, funded by the National Institute of Drug Abuse (NIDA), utilized the *Addiction Belief Inventory* (ABI; Luke, Ribisl, Walton, & Davidson, 2002) to examine addiction attitudes in a national sample of U.S. college/university faculty teaching addiction-specific courses (*n* = 215). Results suggest that addiction educators view substance abuse as a coping mechanism rather than a moral failure, and are ambivalent about calling substance abuse or addiction a disease. Most do not support individual efficacy toward recovery, the ability to control use, or social use after treatment. Modifiers of addiction educator attitudes include level of college education; teaching experience; licensure/certification, and whether the educator is an addiction researcher. Study implications, limitations, and directions for future research are discussed.

*Support for this research came from a National Institute on Drug Abuse (NIDA) Science Education Drug and Alcohol Partnership Award (1 R25 DA 020472-01A1), presented to the Center for the Application of Substance Abuse Technologies (CASAT) at the University of Nevada, Reno.

INTRODUCTION

Addiction has been described as a “chronic, relapsing disease of the brain” (Leshner, 1997), that in 2008, negatively affected an estimated 23 million U.S. individuals age 12 and older (Substance Abuse and Mental Health Services Administration [SAMHSA], 2009). Research suggests that attitudes about this disease influence decisions at multiple levels of society. Research also highlights the lack of information about addiction attitudes among certain important populations. Specifically, few studies capture addiction attitudes among those who teach substance abuse and dependency courses at our nation’s colleges and universities. The following study examines attitudes about addiction within this important population.

Literature Review

Attitudes about addiction influence substance abuse-related decisions from the level of the government to the individual. These attitudes underlie government decisions (Fisher, 2006), including allocation of social resources toward addiction-related programs (National Drug Control Strategy, 2008; Schomerus, Matschinger, & Angermeyer, 2006). For example, the Office of National Drug Control Policy’s *National Drug Control Strategy* is built upon three pillars:

1. Stopping Use Before It Starts [prevention],
2. Healing America’s Drug Users [treatment], and
3. Disrupting the Market for Illicit Drugs [domestic and international law enforcement] (National Drug Control Strategy, 2008, p. 1).

An examination of the budgets for these pillars reveals that domestic and inter- national law enforcement (65%) outstrip allocations for substance abuse treatment (24%) and prevention (11%). This disparity could suggest that addiction treatment and prevention may be less important nationally than curtailing crime associated with substance abuse.

Addiction attitudes also influence criminal justice policies related to substance abuse (Hser, Teruya, Brown, Huang, Evans, & Anglin, 2007), and judicial and jury decisions when substance abuse is a factor in the crime (Gebelein, 2000; Gibeaut, 1997; Goldkamp, 1995; Lee & Rasinski, 2006; Sweitzer, 1997). Lee and Rasinski (2006) found a significant direct relationship between attributions of personal responsibility and

moral deficit in addicts and an endorsement of greater punishment for first-time possession of cocaine. In another example, the decision of several states to prohibit the use of voluntary intoxication as a legal defense for criminal behavior may be attributed to negative public attitudes toward alcohol addiction (Gibeaut, 1997; Sweitzer, 1997).

The influence of addiction attitudes is apparent when examining treatment providers' use of evidence-based practices and other treatment-related decisions (Caplehorn, Irwig, & Saunders, 1996b; Meza, Cunningham, el-Guebaly, & Couper, 2001; Moyers & Miller, 1993). Caplehorn et al. (1996b) noted that abstinence-oriented physicians prescribed lower doses of methadone to heroin- addicted patients and had lower patient retention rates than physicians oriented toward indefinite methadone maintenance. Moyers and Miller (1993) found that therapists who endorsed a disease model of addiction were less likely to incorporate client treatment goals into treatment plans or promote a harm- reduction model, while those endorsing a psychosocial model of addiction were more likely to encourage lapsed clients to return to treatment.

Finally, addiction attitudes may influence behavior toward those with substance use disorders (SUDs; Luoma, Twohig, Waltz, Hayes, Roget, Padilla, et al., 2007), personal decisions regarding use (Trafimow, 1996), and individual acceptance of new addiction-related information. For example, moralistic attitudes about addiction reduce tolerance and increase stigma toward those with substance use disorders (SUDs; Caplehorn, Irwig, & Saunders, 1996a; Luoma et al., 2007; Peele, 1998). Such stigma may generate a barrier to individual acceptance of personal substance abuse dependency thereby delaying onset of treatment. Recent findings by the National Survey on Drug Use and Health (SAMHSA, 2009) provide a cogent example of the influence of addiction attitudes. Of the 23 million individuals (8.3% of the total U.S. population age 12 and older) meeting diagnostic criteria for substance abuse disorders during 2008, 21 million did not receive treatment at any specialty clinic, including hospitals (inpatient only), mental health centers or substance abuse rehabilitation facility (SAMHSA, 2009, Section 7.3). When questioned, 3.7% agreed they needed treatment but made no effort to obtain help and 95.2% refused to believe they needed treatment. Thus, user beliefs and attitudes acted as a barrier to actually receiving treatment.

While research about addiction attitudes is prominent in the literature, no studies have examined attitudes held by instructors who teach substance abuse and addiction courses. Education and services marketing research suggests that instructor attitudes may be an important factor in student motivation, learning, and attitudes (Curran & Rosen, 2006), and may define teaching goals and methods, and instructional content (Bryan & Atwater, 2002; Weber, 2004). For example, one study notes that student attitudes toward college courses are influenced by their perception of instructors as knowledgeable, enthusiastic/lively, caring/ helpful, and well-spoken (Curran & Rosen, 2006). Attitudes such as instructor enthusiasm also are strong predictors of student intrinsic motivation (Patrick, Hisley, & Kempler, 2000). In another study, students rated instructor enthusiasm, knowledge of the subject matter, respectfulness, and level of interest in the subject matter as the top four factors important to their learning (Lammers & Smith, 2008). Finally, instructor beliefs and attitudes about particular teaching practices in subjects such as elementary mathematics influenced their resulting instructional practices (Wilkins, 2008). Given the results of these studies, it is plausible to expect that the attitudes of addiction instructors are important to student learning about addiction.

Given the possible influence of instructor attitudes and beliefs on student learning, a study was conducted to capture addiction attitudes in addiction educators within university settings. This study represents one piece of a larger research project that examined addiction attitudes in undergraduate students enrolled in introductory criminal justice, nursing, and social work courses at a Western university, followed by development of a brief (3-hour) research-based undergraduate curriculum infusion on the neuroscience of addiction.

Methods

The National Institute on Drug Abuse (NIDA) Science Education Drug Abuse Partnership Award supported this study, and the University of Nevada, Reno Human Subjects Board approved all research. A national sample of university/ college addiction educators was recruited to complete an Internet survey examining professional background, knowledge, and attitudes related toward the science of addiction. The

Addiction Belief Inventory (ABI, Luke et al., 2002) was included in this survey as a measure of addiction attitudes and beliefs.

Population

Instructors were recruited from university/college programs listed in the National Addiction Technology Transfer Center (ATTC) Director of Addiction Study Programs (*N* = 358). Program administrators and department chairpersons at these universities/colleges were contacted via phone/e-mail to verify existence of the listed program and to establish the number of addiction-related courses within their programs. Programs having a minimum of three addiction-related courses met criteria for inclusion in the study (*n* = 319). Cluster-sampling methods were utilized to obtain the initial sample of universities/colleges from the list of eligible programs. From this sample, a random selection of target programs was selected (*n* = 145). Program administrators and chairpersons in the target sample then were contacted with requests for e-mail addresses of all addiction educators within each institution's addiction program. Of those institutions contacted, 70% (*n* = 101) provided email addresses for 385 educators. Recruitment e-mails and a survey web link were sent to these potential participants. Instructors received two follow-up e-mails at 1-week intervals to encourage participation. As an incentive, participants also received a $10 Amazon.com gift certificate upon completion of the survey. The overall response rate for targeted colleges/ universities was 72% (*n* = 93), with an educator response rate of 56% (*n* = 215).

Measures

A slightly modified version of the *Addiction Belief Inventory* (ABI, Luke et al., 2002) was included in the survey to examine addiction attitudes and beliefs. Luke et al. (2002) developed the addiction attitude instrument using participants in treatment for substance abuse and co-occurring disorders. Therefore, some terminology might be less relevant to other populations. For this study, the term "alcoholics/addicts" and phrase "an addicted person" was replaced with "most people with drug or alcohol problems." These grammatical modifications were intended to clarify questions for the

educator audience without changing the intent/content of the question.

The ABI is a 30-item instrument that measures addiction beliefs and attitudes using a 5-point Likert scale that ranges from 1 (*strongly disagree*) to 5 (*strongly agree*) (see Appendix A). As measured by the Flesch-Kincaid Grade Level, questions were written for a 9th grade reading level and should be understandable to an academic population. Luke et al.'s (2002) confirmatory factor analysis and structural equation modeling of the ABI revealed seven subscales, with Cronbach alphas ranging from .61 to .83, and re-test reliability correlations averaging .46. An eighth subscale (i.e., Moral Weakness) was deleted from the final instrument in Luke et al.'s original study due to poor fit and internal consistency problems. Given that the moral model construct directly pertains to beliefs about the etiology of addiction, items from the Moral Weakness subscale were included in the current study. Luke et al.'s (2002) subscales are identified and defined as follows:

- *Inability to Control*: Addicted persons cannot regulate their alcohol/drug use. Social uses of substances are not possible.
- *Chronic Disease*: Addiction is a chronic disease that does not get better. The only chance for management is abstinence.
- *Reliance on Experts:* Recovery is only possible with help from others, especially experts and professionals.
- *Responsibility for Actions*: Addicted persons are responsible for their actions and drug use.
- *Responsibility for Recovery*: Addicted persons are personally responsible for their own recovery.
- *Genetic Basis*: Addiction has genetic causes.
- *Coping*: Alcohol/drugs are used to cope with stressful life situations.
- *Moral Weakness*: Using alcohol/drugs is a sign of moral weakness and is a willful action.

RESULTS

Demographics

Addiction educators from 35 U.S. states responded to the survey. Of the 93

universities and colleges enrolled in the study, 31% were two-year institutions and 69% were four-year colleges or universities. The survey sample was almost evenly divided with 50.7% male and 49.3% female respondents. Participant age ranged from 27 to 72 years with a mean age of 51.4 years. Race/ethnicity was reported as follows: White (80.9%); Hispanic (3.8%); Black (5.6%); American Indian/Alaskan Native (1.9%); Asian (0.9%); Native Hawaiian/Pacific Islander (0.9%); multiethnic (5.6%); and other (4.2%). Reported educational levels included Associate degree (1.4%); Bachelors degree (4.2%); Master's degree (55.8%); Professional degree (3.3%); and Doctoral degree (35.3%). Years of teaching at the college/university level ranged from 1-32 years, with a mean of 12 years. In addition to teaching duties, 31.6% of educators participate in substance abuse research. Finally, 57.3% of participants indicated they were certified or licensed as a substance abuse counselor.

Data Analysis

Factor analysis using Varimax Rotation and item analysis supported a five-component scale, explaining 65% of the variance. Cronbach alphas for these subscales ranged from .61 to .95 with scales having from three to six items per scale: Coping (α = .95, *M* = 3.72), Disease (α = .69, *M* = 3.26), LackEfficacy (α = .64, *M* = 3.14), Efficacy (α = .77, *M* = 2.30), and Moral (α = .61, *M* = 2.16; see Table 1).

The Coping subscales' high alpha (α = .95) suggests that items within the subscale may be redundant. Alphas for Disease (α = .69), LackEfficacy (α = .64) and Moral α = .61) subscales were lower than conventionally acceptable in measurement development, suggesting that scale items represent multidimensional constructs with low internal consistency rather than the more desirable unidimensional constructs. A further review of inter-subscale correlations also highlights the complexity of addiction attitudes (see Table 2). All subscales showed significant correlations with at least one other subscale and three of the subscales were significantly correlated across multiple subscales.

Luke et al. (2002) in their development of the ABI also found low subscale alphas (α = .63-.71). These researchers rationalized that subscale brevity (e.g., 4-5 items each) was a factor in the resulting low internal consistency, but pragmatically chose the

lower alphas in exchange for a shorter instrument. This subscale brevity explanation also holds for our analysis of the instrument. How- ever, these issues also highlight potential problems with subscale reliability.

Conventional statistical wisdom would offer that the inability to separate attitudes into unidimensional constructs would cloud the validity of data interpretation and we agree. However, attitudes tend to be multidimensional constructs (Eagly & Chaiken, 1993), making it extremely difficult to parse out unidimensional factors. For example, the high correlation between beliefs about the inheritability of addiction (e.g., Disease subscale) and beliefs that addicts should rely on professional help in recovery (e.g., LackEfficacy subscale) may be understandable if addiction is viewed as a disease. After all, most people go to a professional (e.g., doctor) when ill. However, these beliefs also represent distinct attitudes about addiction. In addition to this argument, Luke et al. noted that further confirmatory factor analysis revealed that the subscales did represent unidimensional constructs. For these reasons, we elected to interpret each subscale as if the attitudes are unidimensional with the caveat that we recognize further research into the validity of this instrument is indicated.

A review of the subscale responses revealed that over half of the educators (55.1%) agreed that substance abuse is a coping response. Less than 20% endorsed addiction as a disease, while over half (57.5%) of the responses on this scale were in the neutral range. Educator response to the LackEfficacy subscale items also indicated some ambivalence with almost half of the responses (47.8%) in the neutral range and over one-third (35%) disagreeing that individuals with substance abuse problems must see professional help or rely on expert guidance for recovery. Alternatively, few educators (1.7%) appeared to agree that individuals with substance abuse problems have efficacy in their recovery or use. For example, individual item analysis revealed that over a third of educators (32.0%) believe addicts are incapable of recovery without help. Almost half (47.5%) of the educators disagreed with the statement that a drug or alcohol problem “can only get worse,” and the majority (79.6%) agreed that recovery is a continuous process that never ends. Finally, the majority of educators (85.6%) disagreed that substance abuse or relapse has a moral etiology or that an addict is “at fault” for their use.

Seven ABI questions failed to load on any unique component and were analyzed individually (see Table 3). Although few educators supported individual efficacy toward recovery, almost all educators (93.3%) believed that addicts are personally responsible for their recovery. Over half indicated that addicts are responsible for "fixing themselves" (60.1%) and that only the individual can decide when to stop drinking or using drugs (52.3%). Just over a third (37.0%) believe that addicts are personally responsible for their addiction, and almost a half (43.8%) suggest that individuals start using because they want to. Finally, the majority of educators believe addicts should be held accountable for behavior while under the influence (87.2%) and that addicts are responsible for behavior committed prior to learning about their addiction (89.8%).

Regression analysis revealed that increases in experience as an educator are associated with lower support for a disease model of addiction (addiction is inherited; people are addicts from birth, children of addicts will become addicts themselves; and addiction is a disease) (B = –.013, p = .035; R^2 = .019). Teaching experience also has a small, but significant relationship with a reduction in the belief that addicts must rely on expert help and guidance during recovery or seek professional help, are unable to solve their addiction problems without help, and have to stop all substance use to be healed (B = –.015, p = .019, R^2 = .025).

In addition to the above, educator beliefs were measured as a function of their highest college degree, from associate to PhD. Results indicated that level of college degree is associated with support for the disease and efficacy subscales. Educators with higher degrees (e.g., Professional degrees, PhD) are less likely to view addiction as a disease (B = –.120, p = .014, R^2 =.028). Higher degrees also were associated with greater endorsement that addicts can learn to drink socially with treatment (B = .169, p = .001, R^2 = .052).

Although no significant gender differences in attitudes were found, trends support that women instructors are more likely men instructors to view addiction as either a disease or coping mechanism, or believe that addicts must have expert help to recover. Women instructors are less likely to support that addiction results from personal weakness or failure. Men instructors are more likely to state that addicts can recover

and use socially after treatment.

Table 1. ABI Addiction Educator:
Factor Analysis and Subscale Reliability

Item	Component loading	Subscale title/ Cronbach alpha, and Scale Mean
Most people with drug or alcohol problems use drugs and/or alcohol to avoid personal problems	.926	Coping subscale $\alpha = .95$ Mean = 3.72 Std = .69
Most people with drug or alcohol problems use drugs and/or alcohol to escape from bad family situations	.912	
Most people with drug or alcohol problems use substances to lessen their depression	.909	
Most people with drug or alcohol problems use substances because they cannot cope with life	.906	
Most people with drug or alcohol problems use drugs and/or alcohol to feel better about themselves	.875	
Most people with drug or alcohol problems can learn to control their drinking or using	.772	Efficacy subscale $\alpha = .77$ Mean = 2.30 Std = .70
Most people with drug or alcohol problems are capable of drinking socially	.737	
Most people with drug or alcohol problems can control their use	.733	
Treatment can allow addicts to drink or use socially	.634	
Recovery is a continuous process that never ends	−.508	
A drug or alcohol problem can only get worse	−.460	
Substance addiction is inherited	.767	Disease subscale $\alpha = .69$ Mean = 3.27 Std = .68
Some people are addicts from birth	.702	
Children of addicts will become addicts themselves	.617	

Table 1. (Cont'd.)

Item	Component loading	Subscale title/ Cronbach alpha, and Scale Mean
Addiction is a disease	.472	
Most people with drug or alcohol problems should rely on expert help and guidance during recovery	.735	LackEfficacy subscale $\alpha = .64$ Mean = 3.14 Std = .72
Most people with drug or alcohol problems must seek professional help	.646	
Most people with drug or alcohol problems are not capable of solving their problem on their own	.565	
Most people with drug or alcohol problems have to stop using all substances to be healed	.527	
Abusing substances is a sign of personal weakness	.787	Moral subscale $\alpha = .61$ Mean = 2.16 Std = .62
Relapse is a personal failure	.729	
It is not the addicts fault that they drink or use	–.374	

Note: Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

Educators who do not do research in the field of addiction are significantly less likely to believe that addicts have efficacy in recovery, and can learn to use or drink socially (Wald chi-square = 9.13, *B* = –.345, *p* = .003). In addition, trends suggest that educators who also are researchers tend to be more likely than are non-researchers to endorse addiction as a coping mechanism and a personal weakness. Researchers are less likely to endorse addiction as a disease or to believe that addicts have personal efficacy in controlling their use.

Licensure or certification as a substance abuse counselor is significantly associated with attitudes and beliefs about addiction. Respondents without licensure or

certification were significantly more likely to view addiction as a moral weakness or personal failure (Wald chi-square = 5.60, *B* = .237, *p* = .018), and to believe that addicts can control their use and learn to use socially (Wald chi-square = 5.11, *B* = .246, *p* = .024).

Table 2. Subscale Correlations

		Subscale				
Subscale	*r*² *p* value *N*	Disease subscale	LackEfficacy subscale	Moral subscale	Coping subscale	Efficacy subscale
Disease subscale	Pearson correlation	1	.314**	−.196**	.068	−.486**
	Sig. (2-tailed)		.000	.008	.366	.000
	N	181	180	181	180	181
LackEfficacy subscale	Pearson correlation	.314**	1	.025	.220**	−.456**
	Sig. (2-tailed)	.000		.743	.003	.000
	N	180	180	.180	180	180
Moral subscale	Pearson correlation	−.196**	.025	1	.030	.209**
	Sig. (2-tailed)	.008	.743		.690	.005
	N	181	180	181	180	181
Coping subscale	Pearson correlation	.068	.220**	.030	1	−.119
	Sig. (2-tailed)	.366	.003	.690		.111
	N	180	180	180	180	180
Efficacy subscale	Pearson correlation	−.486**	−.456**	.209**	−.119	1
	Sig. (2-tailed)	.000	.000	.005	.111	
	N	181	180	181	180	181

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

CONCLUSION AND DISCUSSION

Results show that addiction educators, particularly those who also are researchers, strongly endorse that addiction is a coping mechanism for dealing with depression, bad family situations, inability to cope with life, avoidance of personal problems, and to increase personal self-esteem. In general, addiction educators do not characterize addiction as a moral failure or believe that addiction will worsen over time. However, those without licensure or certification as a substance abuse counselor are more likely to endorse a moral model of addiction. The majority of addiction

educators did not support individual efficacy toward recovery, the ability to control use, or social use after treatment. In addition, educators with less college education and more experience as an addiction educator were more likely to characterize addiction as a disease, with high inheritability. While belief in addiction as a disease may be associated with less stigmatizing attitudes toward those with substance use disorders, they also may reduce perceptions of personal efficacy in combating addiction and increase endorsement of total abstinence as the only viable solution to abuse.

Table 3. Addiction Educator Factor Analysis:
Items Failing to Load in Current Study

Items	Luke et al. (2002) Item subscale loading
Alcoholics/addicts are responsible for their recovery	Responsible for Recovery
Are ultimately responsible for fixing themselves	Responsible for Recovery
Only the alcoholic/addict can decide when to stop using alcohol or other drugs	Responsible for Recovery
An alcoholic/addict should not be held accountable for things they do while drunk or high	Responsibility for Actions
Alcoholics/addicts are not responsible for things they did before the learned about their addiction	Responsibility for Actions
Start using because they want to	Moral Weakness
Are personally responsible for their addiction	Moral Weakness

The importance of educator attitudes on student outcomes was highlighted previously. Educator bias may influence the information transmitted from educator to student, inadvertently transferring attitudes to students that reduce an unbiased consideration of alternative viewpoints. If beliefs differ between educators and students, the outcome may be the loss of valuable information. For example, a student who believes that addiction is a personal weakness may be less receptive to or openly reject the neurobiological aspects of addiction as a disease. An educator's bias toward addiction as a disease also may color the information provided about other addiction

beliefs.

Addiction educators would benefit from an awareness of their personal beliefs and attitudes about addiction, particularly from the standpoint of how these beliefs and attitudes influence their educational content and instructional practice. Addiction educators also would benefit from understanding their students' attitudes and beliefs in order to better counter erroneous or culturally stigmatizing attitudes toward addiction. In addition, awareness of shared beliefs and attitudes between the two groups could help foster a sense of trust, thereby increasing information receptivity.

In addition to gaining a better understanding of addiction educator beliefs about substance abuse, this study suggests potential external validity issues with the ABI. Factor analysis indicated that addiction educators do not construct addiction beliefs and attitudes the same as treatment populations utilized to develop the ABI. Luke et al.'s (2002) study supported seven components, while this study supported a five-component scale. An examination of subscale item loading revealed only one subscale loaded with identical items as the ABI: the Coping subscale. The Efficacy subscale utilized the items from the ABI's *Inability to Control* subscale with an additional two items from the *Chronic Disease* subscale. The Disease subscale utilized three items from the ABI's *Genetic Basis* subscale and one item from the *Chronic Disease* subscale. The LackEfficacy subscale utilized three items from the ABI's *Reliance on Experts* subscale and one item from the *Chronic Disease* subscale. Finally, the Moral subscale utilized two items from the ABI's original *Moral Weakness* subscale and one item from the *Responsibility for Actions* subscale. The item variations from Luke et al's (2002) initial study to this one suggest problems with subscale reliability that should be further examined.

Limitations and Future Research

Although every attempt was made to ensure a random sample of Addiction Educators, some uncertainty naturally exists as to whether the national list included all college and university addiction programs within the United States. In addition, those who elected to respond to the Internet survey may not have carried the same set of beliefs about addiction as those who did not respond.

Another limitation to the current study is our failure to gather substance use and substance abuse treatment history information from study participants. It is possible that some of the participants in this study did not meet the “non- treatment” criteria, which would jeopardize our claims of assessing instrument validity with such a population. Substance use/treatment information was not gathered for this study due to the highly sensitive nature of the information. Addiction educators might have been hesitant to respond to such questions amid concerns of potential adverse effects on their employment. Although the lack of substance use/treatment demographic information poses a limitation to the study, and would be important information to consider in future research, the absence of those data does not negate the importance of the current findings.

As indicated earlier in this article, understanding public beliefs and attitudes about the construct of addiction, as well as views toward specific substances of abuse is important to increasing knowledge and decreasing stigmatizing attitudes toward individuals with SUDs. For this reason, wording of items in the ABI may be problematic if the goal is to access such general attitudes. Use of the terms “addict” and “alcoholic” in the same question may suggest that attitudes between the two do not differ. However, if public perception includes differentiation between those who abuse illicit substances and those who abuse legal substances such as alcohol and nicotine, then one attitudinal measure should not be used to assess two distinct attitudes.

Future research is indicated to elucidate the attitudes of undergraduate students who may take addiction courses, as it is plausible that student attitudes toward substance abuse and addiction may influence receptivity of addiction-related information. As with instructor attitudes and beliefs, research supports that student beliefs and attitudes can influence student learning (Gal & Ginsberg, 1994; Perkins, Adams, Pollock, Finkelstein, & Wieman, 2005). Gal and Ginsberg (1994) noted a relationship between student attitudes and beliefs, and student success in learning statistics. Perkins et al. (2005) also found a positive correlation between student pre-existing attitudes and beliefs about science and subsequent gains in conceptual learning. Of particular importance may be studies examining student attitudes toward addiction within college programs such as criminal justice, social work, and nursing, as employees in these

fields are highly likely to encounter individuals impacted by the use of illicit drugs.

APPENDIX A

Addiction Belief Inventory

The following questions are about your beliefs on social issues including addiction.* Please indicate your agreement or disagreement with each statement using the following scale: 1 (*Strongly Disagree*), 2 (*Disagree*), 3 (*Neither Disagree nor Agree*), 4 (*Agree*), 5 (*Strongly Agree*). (To minimize order bias, these questions will be randomly mixed prior to use. The order given below is to show the reader the question content only.)
(*subscales added)

Inability to Control

1. An addicted person can control their use.
2. Alcoholics/addicts can learn to control their drinking/using.
3. Addicted persons are capable of drinking/using drugs socially.
4. Treatment can allow alcoholics/addicts to drink/use socially.

Chronic Disease

1. A drinking or drug problem can only get worse.
2. Recovery is a continuous process that never ends
3. To be healed, addicted persons have to stop using all substances.
4. Alcoholism/drug abuse is a disease.

Reliance on Experts

1. Alcoholics/addicts are not capable of solving their drinking/drug problem on their own.
2. An alcoholic/addict must seek professional help.
3. A recovering addict should relay on other experts for help and guidance.

Responsibility for Actions

1. An alcoholic/addict should not be held accountable for things they do while drunk/high.
2. It is not an alcoholic/addict's fault they drink/use.

3. Alcoholics/addicts are not responsible for things they did before they learned about their addiction.

Responsibility for Recovery

1. Alcoholics/addicts are responsible for their recovery.
2. Only the alcoholic/addict themselves can decide when to stop drinking/ using drugs.
3. Ultimately, the addict is responsible to fix him/herself.

Genetic Basis

1. Some people are alcoholics/addicts from birth.
2. Alcoholism/drug addiction is inherited.
3. Children of alcoholics/addicts who drink or use drugs will become alcoholics/ addicts.

Coping

1. An addicted person uses alcohol/drugs to avoid personal problems.
2. People use drugs/alcohol to feel better about themselves.
3. People use substances to lessen their depression.
4. Alcoholics/addicts use because they cannot cope with life.
5. Alcoholics/addicts use substances to escape from bad family situations.

Moral Weakness

1. Abusing alcohol/drugs is a sign of personal weakness.
2. Alcoholics/addicts are personally responsible for their addiction.
3. Relapse is a personal failure.
4. Alcoholics/addicts start drinking/using because they want to.
5. It is their fault if an alcoholic/addict relapses.

GLOSSARY

Addiction: A chronic, dehabilitating brain disorder characterized by repeated, uncontrollable, and compulsive use of a psychoactive substance in spite of negative physical and social consequences.

Addiction Belief Inventory: The Addiction Belief Inventory is a 30-item survey developed by Luke, Ribisl, Walton, and Davidson in 2002 to measure addiction beliefs and attitudes among individuals with substance use disorder. Beliefs and attitudes

about addiction are assessed using a 5-point Likert scale that ranges from 1 (*strongly disagree*) to 5 (*strongly agree*). Confirmatory factor analysis revealed support for seven subscales: inability to control, chronic disease, reliance on experts, responsibility for actions, responsibility for recovery, genetic basis, and coping.

Beliefs: Beliefs are the underlying assumptions or knowledge about an object or item that form the basis of attitudes toward the object or item.

Disease Model: A constellation of beliefs about addiction that characterize the etiology, recovery, and relapse from a biological and neuroscientific stand- point. According to this model, addiction is a chronic brain disease characterized by changes at the neuronal level that influence motivation, craving, and drug-seeking behavior. Recovery is an extended process of brain healing, possible only through abstinence from psychoactive substances. Relapse occurs as a consequence of changes in the prefrontal cortex, which effects decision-making, and the brain reward pathways that influence craving and motivation. Relapse is expected as the norm rather than the exception during recovery. Treatment for addiction must consider the protracted nature of the disorder, much like treatment for other chronic diseases such as hypertension and diabetes.

Factor analysis: Factor analysis is a statistical method of finding the latent con- structs underlying a set of variables. In this study, six underlying constructs (Coping, Moral Weakness, Chronic Disease, Efficacy, Responsibility for Recovery, and Genetic Basis) were used to account for 30 survey items.

Models of Addiction: In order to provide a more coherent understanding of the various beliefs and attitudes about addiction, it is helpful to categorize similar beliefs and attitudes under specific addiction models. Successful models capture the multidimensional nature of substance use, abuse, and dependence, including etiological factors, the influence of relevant moderators, the rationale behind and personal responsibility for continued use, the benefits of treatment, and prognosis for change.

Moral Model: A constellation of beliefs about addiction that characterize the etiology, recovery, and relapse from the perspective of personal choice. According to the

model, addiction results from a personal choice to disobey U.S. law or a personal weakness and, thus, is morally wrong. Recovery is possible if the addict is appropriately motivated and punishment is considered to be a proven consequence for use. Relapse stems from personal weakness or a lack of motivation. Adherents to the moral model believe that addicts can be taught to use legal drugs moderately.

Multivariate analysis: Multivariate analysis is a statistical analysis of data sets with multiple variables. For this study, multivariate analysis included a "group" variable with two levels (educator and student), and a "belief/attitude" variable with six levels (Coping, Moral Weakness, Chronic Disease, Efficacy, Responsibility for Recovery, and Genetic Basis).

Self-Efficacy: An individual's estimate or personal judgment of his or her own ability to succeed in reaching a specific goal, e.g., quitting smoking or losing weight or a more general goal, e.g., continuing to remain at a prescribed weight level (http://cancerweb.ncl.ac.uk/cgi-bin/omd?self-efficacy).

ACKNOWLEDGMENT

The authors would like to thank Gretchen Casey for her helpful comments and editorial acumen.

REFERENCES

Bryan, L. A., & Atwater, M. M. (2002). Teacher beliefs and cultural models: A challenge for science teacher preparation programs. *Science Education, 86*(6), 821-839.

Caplehorn, J. R. M., Irwig, L., & Saunders, J. B. (1996a). Attitudes and beliefs of staff working in methadone maintenance clinics. *Substance Use & Misuse, 31*(4), 437-452.

Caplehorn, J. R. M., Irwig, L., & Saunders. J. B. (1996b). Physicians' attitudes and retention of patients in their methadone maintenance programs. *Substance Use & Misuse, 31*(6), 663-677.

Curran, J. M., & Rosen, D. E. (2006). Student attitudes toward college courses: An examination of influences and intentions. *Journal of Marketing Education, 28*(2),

135-148.

Eagly, A. H., & Chaiken, S. (Eds.). (1993). The nature of attitudes. *The psychology of attitudes* (pp. 1-21). Belmont, CA: Wadsworth Group/Thomson Learning, Inc.

Fisher, G. L. (2006). *Rethinking our war on drugs: Candid talk about controversial issues.* Westport, CT: Praeger.

Gal, I., & Ginsberg, L. (1994). Learning statistics: Towards an assessment framework. *Journal of Statistics Education, 2*(2). Retrieved on May 26, 2009, from http://www. amstat.org/publications/jse/v2n2/gal.html

Gebelein, R. S. (2000, May). The rebirth of rehabilitation: Promise and perils of drug courts. *U.S. Department of Justice, Office of Justice Programs. Sentencing & Corrections: Issues for the 21st Century.* Retrieved on July 21, 2007, from http://www.ncjrs.gov/pdffiles1/nij/181412.pdf

Gibeaut, J. (1997). Sobering thought. *American Bar Association Journal, 83*(5), 56-62.

Goldkamp, J. (1995). The drug court movement. *U.S. Department of Justice: Office of Justice Programs, National Institute of Justice Update, 184392.* Retrieved on July 20, 2007, from http://www.ncjrs.gov/pdffiles/drgctmov.pdf

Hser, Y., Teruya, C., Brown, A. H., Huang, D., Evans, E., & Anglin, M. D. (2007). Impact of California's proposition 36 on the drug treatment system: Treatment capacity and displacement. *American Journal of Public Health, 97*(1), 104-109.

Lammers, W. J., & Smith, S. M. (2008). Learning factors in the university classroom: Faculty and student perspectives. *Teach of Psychology, 35,* 61-70.

Lee, R. D., & Rasinski, K. A. (2006). Five grams of coke: Racism, moralism and White public opinion on sanctions for first time possession. *International Journal of Drug Policy, 17,* 183-191.

Leshner, A. I. (1997). Addiction is a brain disease, and it matters. *Science, 278,* 45-47.

Luke, D. A., Ribisl, K. M., Walton, M. A., & Davidson, W. S. (2002). Assessing the diversity of personal beliefs about addiction: Development of the addiction belief inventory. *Substance Use & Misuse, 37*(1), 89-120.

Luoma, J. B., Twohig, M. P., Waltz, T., Hayes, S. C., Roget, N., Padilla, M., et al. (2007). An investigation of stigma in individuals receiving treatment for substance abuse. *Addictive Behaviors, 32*(7), 1331-1346.

Meza, E. E., Cunningham, J. A., el-Guebaly, N., & Couper, L. (2001). Alcoholism: Beliefs and attitudes among Canadian alcoholism treatment practitioners. *Canadian Journal of Psychiatry, 46*(2), 167-172.

Moyers, T. B., & Miller, W. R. (1993). Therapists' conceptualizations of alcoholism: Measurement and implications for treatment decisions. *Psychology of Addictive Behaviors, 7*(4), 238-245.

National Drug Control Strategy FY 2009 Budget Summary. (2008). *Office of National Drug Control Policy.* Retrieved on September 1, 2009, from http://www.eric.ed.gov/ ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/41/b2/b2.pdf

Patrick, B. C., Hisley, J., & Kempler, T. (2000). 'What's everybody so excited about?': The effects of teacher enthusiasm on student intrinsic motivation and vitality. *Journal of Experimental Education, 68*(3), 217-236.

Peele, S. (1998). The results for drug reform goals of shifting from interdiction/punishment to treatment. *International Journal of Drug Policy, 9,* 43-56.

Perkins, K. K., Adams, W. K., Pollock, S. J., Finkelstein, N. D., & Wieman, C. E. (2005). Correlating student beliefs with student learning using the Colorado learning attitudes about science survey. *AIP Conference Proceedings, 790*(1), 61-64.

Schomerus, G., Matschinger, H., & Angermeyer, M. C. (2006). Alcoholism: Illness beliefs and resource allocation preferences of the public. *Drug and Alcohol Dependence, 82,* 204-210.

Substance Abuse and Mental Health Services Administration (SAMHSA). (2009). *Results from the 2008 National Survey on Drug Use and Health: National Findings* (Office of Applied Studies, NSDUH Series H-36, HHS Publication No. SMA 09-4434). Rockville, MD. Retrieved on June 3, 2010 from http://www.oas.samhsa.gov/nsduh/ 2k8nsduh/2k8Results.cfm#7.3

Sweitzer, B. G. (1997). Implicit redefinitions, evidentiary proscriptions, and guilty minds: Intoxicated wrongdoers after Montana v. Eglehoff. *University of Pennsylvania Law Review, 146*(1), 269-321.

Trafimow, D. (1996). The importance of attitudes in the prediction of college students'

intentions to drink. *Journal of Applied Social Psychology, 26*(24), 2167-2188.

Weber, K. (2004). Traditional instruction in advanced mathematics courses: A case study of one professor's lectures and proofs in an introductory real analysis course. *Journal of Mathematical Behavior, 23,*115-133.

Wilkins, J. L. M. (2008). The relationship among elementary teachers' content knowledge, attitudes, beliefs, and practices. *Journal of Mathematics Teacher Education, 11,* 139-164.