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The purpose of the current study was to examine both social interest and social bonding in relation to collegiate hazardous drinking and marijuana use. Social interest is a component of Adler's Individual Psychology and refers to one's interest in the welfare of others (Ansbacher, 1992). This construct has been linked to substance abuse in light of Adler's assertions that alcohol and drug abuse are consequences of the failure to develop social interest (Adler, 1956). Social bonding, developed by Travis Hirschi, is a construct stemming from Control Theory. Hirschi posited that one's bond to society is created by four elements, namely, attachment, commitment, involvement, and belief. He asserted that strong social bonding curbs delinquent behavior, which includes all acts punishable by agents of society if discovered, including illegal alcohol and marijuana use (Hirschi, 1969). Therefore, this study examined the relationship between the internal construct of social interest and the external construct of social bonding on college substance abuse in an effort to better understand those students at-risk for hazardous drinking and marijuana use.

The sample consisted of 300 full-time undergraduate students who completed a 102 item survey packet. The results of the study supported the notion that social interest and social bonding are related to collegiate hazardous drinking and marijuana use. Specifically, the results of the multiple regression analysis indicated that the social bonding variables of Religious Commitment, Conventional Beliefs, and Respect for Authority accounted for 21% of the variance in collegiate hazardous drinking.

Additionally, the results of two omnibus MANOVA tests revealed that both social interest and social bonding variables significantly differed between groups of marijuana users ranging from nonusers to daily users, and significantly differed between substance abuse configurations including those who neither engage in hazardous drinking nor marijuana use, engage in hazardous drinking only, engage in marijuana use only, or engage in both substance abusing behaviors. Finally, the results of a discriminant function analysis indicated that Religious Commitment, Conventional Beliefs, and Respect for Authority were significant predictors of membership in the substance abuse configuration groups.

These results have implications for counselors and counselor educators. Counselors working with collegiate populations may benefit by addressing social interest and social bonding elements with their clients through assessments and interventions, as well as incorporating these constructs into their conceptualizations and treatment plans. Counselor educators may best serve counselors-in-training by infusing the constructs of social interest and social bonding into course curriculum.

Finally, these results have implications for future research. In the future, researchers should explore each of the significant social interest and social bonding variables that contributed to differences between groups of college students engaged in various configurations of substance abuse.

SOCIAL INTEREST AND SOCIAL BONDING: UNDERSTANDING COLLEGIATE
HAZARDOUS DRINKING AND MARIJUANA USE

by

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The Lord your God is with you, he is mighty to save. He will take great delight in you, he will quiet you with his love, he will rejoice over you with singing.

—Zephaniah 3:17

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CHAPTER I

INTRODUCTION

For many college students, the collegiate years represent the first experience of living outside of parental/guardian authority. This segment of the lifespan poses both unique possibilities and challenges. Recently, this developmental period has been deemed emerging adulthood, characterized as a time of identity exploration, sensation seeking, and instability (Arnett, 2005). Spanning from ages 18 to 25, emerging adulthood has the highest prevalence of drug and alcohol use, with a range from no use to developmentally appropriate exploration to substance abuse. Although experimentation of drug and alcohol use is common and generally informally tolerated within college populations (Arnett, 2005; Dworkin, 2005; Ravert, 2009), specific consideration needs to be paid to characteristics of those whose behavior is problematic. This includes students who engage in hazardous drinking as well as frequent illegal drug use. Beyond what would be deemed as experimental and developmentally appropriate, or even the narrow definition of status offenses from the lens of legality, established patterns of problematic substance abusing behavior among college students demand attention. The prevalence of substance abuse on college campuses in the United States continues to be problematic (Johnston, O'Malley, Bachman, & Schulenberg, 2010), with alcohol and marijuana identified as the two most commonly abused substances among college students (CORE Institute, 2008).

Alcohol, in particular, is abused by large numbers of students. In one longitudinal study with a nationally representative sample of college students, 42% reported being drunk in the 30 days prior to the survey and 37% engaged in binge drinking in the prior 2 weeks (Johnston et al., 2010). Similarly, DeMartini and Carey (2009) found that 53% of undergraduates in their study could be categorized as hazardous drinkers.

Although somewhat less prevalent, marijuana use remains high on college campuses. Recently, researchers have found that 33% of students reported using marijuana in the past year (Johnston et al., 2010). Further, among students who report using illegal drugs, 98% use marijuana (Shinew & Perry, 2005). Thus, alcohol and marijuana use continues to be widespread among undergraduate students.

Even beyond the prevalence numbers, however, are the negative consequences associated with college student substance abuse. Undergraduates report negative repercussions from alcohol or drug use ranging from hangovers and poor test performance to drunk driving and suicide attempts (CORE Institute, 2008). Specifically, 37% of one college student sample reported experiencing some form of public misconduct in the previous year as a result of drugs and alcohol, including DUIs, issues with the police, fighting, and vandalism. Further, 25% of the sample reported the occurrence of serious personal issues, including attempted suicide, sexual assault, being injured, or unsuccessful attempts to stop using (CORE Institute, 2008). Driving under the influence of alcohol or marijuana also is a serious concern, with researchers finding that 30 to 43% of students report driving under the influence of alcohol (McCarthy, Lynch, &

Pederson, 2007; Shillington & Clapp, 2006) and 13% report driving after using marijuana (McCarthy et al., 2007).

Additionally, negative consequences of collegiate substance abuse extend to other forms of risky behaviors. Both alcohol abuse and marijuana use have been associated with increased violence in general within college populations (Cogan & Ballinger, 2006; Nabors, 2010; Parks, Hsieh, Bradizza, & Romosz, 2008) and, specifically, with increased intimate partner violence (Nabors, 2010; Simons, Gwin, Brown, & Gross, 2008). Further, college student alcohol abuse, as well as marijuana use, has been related to a number of risky sexual behaviors such as unprotected sexual activity and increased numbers of sexual partners (Broman, 2007; Poulson, Eppler, Satterwhite, Wuensch, & Bass, 1998). Finally, college students who abuse alcohol and use marijuana have been found to study less and have lower grades (Bell, Wechsler, & Johnston, 1997; Wechsler, Dowdall, Davenport, & Castillo, 1995), and those who binge drink are more likely to procrastinate in their academic pursuits (DePyssler, Williams, & Windle, 2005) and drop out of college (Jennison, 2004).

In light of these trends, researchers have sought to understand, explain, and prevent college student substance abuse. Several theorists have illuminated associations between substance abuse and both internal and external constructs. One relevant internal (i.e., intrapersonal) element is Adler's (1956) construct of social interest, while a related external (i.e., interpersonal) construct is Travis Hirschi's (1969) social bonding. These two constructs are pertinent to the understanding and conceptualization of college student alcohol abuse and marijuana use.

Social Interest

Denoted as the most salient aspect of Adler's writings (Ansbacher, 1968), social interest has been summarized to mean an interest in the welfare of others and sense of belonging in the human community (Ansbacher, 1992). Adler asserted that all individuals are born with the potential to develop social interest, which involves cooperation, empathy, identification with others, and harmony with the universe (Adler, 1956). This innate potential is considered universal, in that all human beings exist with varying levels of social interest. Thus, social interest is an internal, or intrapersonal, characteristic. Individuals with deficiencies in social interest engage in what Adler (1956) identified as socially non-useful behavior, such as criminal acts, suicide, sexual deviance, and, most importantly for the current study, substance abuse.

Inasmuch as Adler posited that all problems in life are social in nature and can only be solved by social interest (Adler, 1976), a wide range of research related to the construct exists in the literature. Throughout years of empirical study, researchers have found positive correlations between social interest and desirable constructs such as healthy spirituality (Leak, 2006), goal attainment (LaFountain, 1996), happiness and empathetic concern (Watkins & Blazina, 1994), self-actualization (Hjelle, 1975) and life satisfaction (Gilman, 2001). Further, social interest has been found to negatively correlate with undesirable constructs such as self-denigrating behavior (Mozdzierz, Greenblatt, & Murphy, 2007), hostility and depression (Crandall, 1975), anxiety and pathology (Fish & Mozdzierz, 1991), and maladjustment (Mozdzierz, Greenblatt, & Murphy, 1986). Thus, increased levels of social interest consistently are associated with positive outcomes,

while deficiencies in social interest are related to detrimental outcomes and negative behaviors.

One possible negative outcome of low social interest is alcohol and drug abuse. Adler (1956) described those with serious drug and alcohol problems as individuals who fail in the area of social interest. Adler posited that these individuals seek to evade the fulfillment of life tasks through the use of substances rather than solving life problems in a socially useful way (Dreikurs, 1990). Thus, according to Adlerian theory, substance abusing behavior is perpetuated by those who have limited social interest. With this theoretical foundation, researchers have sought to empirically investigate the association between social interest and substance abuse. Males abusing alcohol (Chaplin & Orlofsky, 1991) and male and female drug abusers (Colker & Slaymaker, 1984) have been found to have lower social interest levels when compared to control participants. In addition, a recent study determined that male substance abuse patients with lower levels of social interest had more alcohol and drug dependence symptoms than those with higher levels of social interest (Mozdzierz, Greenblatt, & Murphy, 2007). Further, and of particular salience to this study, researchers identified one's level of social interest as a significant predictor of college student binge drinking and quantity of alcohol consumption (Lewis & Watts, 2004).

Therefore, social interest has been found to have significant positive correlations with desirable traits, significant negative correlations with undesirable traits, and has been associated with substance abuse. This innate construct is thereby relevant to the study of college student hazardous drinking and marijuana use. A second construct

related to collegiate substance abuse is Hirschi's (1969) social bonding. While social interest is an internal construct (i.e. intrapersonal), social bonding is external (i.e. interpersonal) in nature and also has been associated with substance abuse among collegiate students.

Social Bonding

The construct of social bonding emerged from Travis Hirschi's Control Theory (1969), which posits that individuals engage in delinquent behavior due to weak or broken bonds to society. Within this framework, social bonds serve to restrain individuals from engaging in any act that he or she believes to be punishable if discovered. Hirschi developed the construct of social bonding in order to identify that which hinders individuals from committing delinquent acts. Delinquency, as defined by Hirschi, refers to any behavior believed to be punishable if discovered (Hirschi, 1969). Hirschi developed the construct of social bonding by studying the delinquent behavior of juveniles, yet due to the broad scope of Hirschi's definition of delinquency, social bonding has been applied to other populations including college students (Cretacci, 2003; Durkin, Blackston, Dowd, Franz, & Eagle, 2009; Durkin, Wolfe, & May 2007; Fukushima, Sharp, & Kobayashi, 2009). In light of the academic and legal ramifications posed as consequences to alcohol abuse and drug using acts within college populations, Hirschi's definition of delinquency includes college student alcohol abuse and marijuana use and, accordingly, is appropriate for the current study.

Hirschi proposed four bonding elements (attachment, commitment, involvement, and belief) that comprise an individual's bond with society. Each of the four elements has

been supported in literature and is associated with decreased delinquent behavior (Akers & Lee, 1999; Ozbay & Ozcan, 2006; Wiatrowski, Griswold, & Roberts, 1981). This support is consistent, albeit moderate, throughout social bonding research (Durkin, Wolfe, & Clark, 1999; Krohn, Massey, Skinner, & Lauer, 1983; Mesch, 2009). Hirschi defined *attachment* as sensitivity to the opinions of others and close affectional ties to significant individuals such as parents and peers. The element of *commitment* is defined as investment in conventionality and the fear of losing that investment if one engages in delinquent behavior. The element of *involvement* is described as the amount of time and energy consumed by conventional activities such as school and work. Finally, Hirschi described the element of *belief* as the existence of a common values system and endorsement of conventional norms (Hirschi, 1969). Social bonding considers one's bond with conventional activities and people, thereby assessing external (or interpersonal) characteristics.

When bonding elements are strong, an individual's tendency to commit delinquent acts is contained. Hirschi posited, however, that a weak bond with society leads to the enactment of delinquent behaviors. Due to the inclusive scope of Hirschi's definition of delinquency, social bonding has been studied in relation to a variety of behaviors including substance use (Ford, 2005), partner violence (Lackey & Williams, 1995), viewing pornography (Mesch, 2009), truancy (Veenstra, Lindenberg, Tinga, & Ormel, 2010), assault (Ozbay & Ozcan, 2008), academic misconduct (Vowell & Chen, 2004), and victimization (Chen, 2009). Generally, researchers have found support for the notion that weak social bonds are associated with an increase in problem behaviors.

In addition to studying social bonding with a variety of behaviors, researchers also have considered social bonding among different populations. Specifically, and of particular relevance to the present study, social bonding has been assessed in college student populations (Cretacci, 2003; Durkin et al., 2009; Durkin et al., 2007; Fukushima, Sharp, & Kobayashi, 2009; Sun & Longazel, 2008; Vowell & Chen, 2004). Researchers have assessed the relationship between social bonding and binge drinking (Durkin et al., 1999), drunk driving (Durkin et al., 2007), alcohol related negative behaviors (Sun & Longazel, 2008), and illegal drug use (Seredycz & Meyer, 2005) with college student samples. Until the current study, however, researchers had not explored the relationship between social bonding and both hazardous drinking and marijuana use in the same sample.

It seems readily apparent, then, that both social interest (an internal construct) and social bonding (an external construct) are related to collegiate substance abuse. Although these variables offer viable independent contributions to the study of college student hazardous drinking and marijuana use, the integration of the two constructs provides a more thorough understanding of the phenomenon.

Need for an Integrated Approach

The merging of both social interest and social bonding within one study is advantageous to the examination of collegiate substance abuse and marijuana use and provides a more thorough conceptualization. Researchers examining social interest and social bonding in isolation have found inconsistent results. For example, in their study of college freshmen, Keene and Wheeler (1994) determined that social interest was not

related to college drug use. These researchers measured social interest by using the social interest index of the Life Style Personality Index (LSPI) and assessed for drug use by utilizing a substance use survey assessing alcohol, cocaine, tobacco, amphetamines, depressants, and other narcotics. However, Lewis and Watts (2004) found that social interest was a significant predictor of both binge drinking and frequency of alcohol consumption among college students. These researchers utilized the belonging and social interest scale of the Basic Adlerian Scales for Interpersonal Success - Adult Form (BASIS-A) to assess for social interest and the Alcohol and Other Drug Survey to measure alcohol use. Therefore, differences may exist due to different social interest measures as well as the type of substance abuse under investigation. In a later study, however, Lewis and Wachter (2006) did not replicate the results of the Lewis and Watts (2004) study despite using the same measures. Thus, these contradictory research findings promote the further investigation of the study of social interest and substance abuse with collegiate samples. In Adler's work, social interest is paramount (Adler, 1956) and a key factor in alcohol and drug abuse, yet the mixed results found in the empirical studies highlight a gap between theory and research. This provides support for the notion that the exploration of social interest alone in college student hazardous drinking and marijuana is insufficient.

Additionally, research efforts exploring social bonding and collegiate substance abuse often produce only moderate support for the predictive strength of social bonding. For example, Sun and Longazel (2008) studied social bonding and college student alcohol use and found moderate support for the predictive value of social bonding with

beta coefficients ranging from .15 to .29. Similarly, Durkin et al. (1999) tested the explanatory power of social bonding on college student binge drinking. The resulting correlations were statistically significant but low, ranging from .15 to .34. Finally, Seredycz and Meyer (2005) explored the association between social bonding and illicit drug use among college students. Due to the low proportion of variance explained by social bonding (8-11%), the researchers suggested that the model would be strengthened by the inclusion of additional predictor variables. Therefore, the high level of variance left unexplained by social bonding supports the need for the integration of social bonding with another factor, such as social interest, to potentially account for more variance in collegiate substance abuse.

In summary, both the internal construct of social interest and the external construct of social bonding have proven somewhat useful in the explanation of collegiate substance abuse. An integrated approach, however, in which both social interest (internal) and social bonding (external) are considered, serves to more thoroughly explain college student substance abusing behavior.

Additional support for the integration of social interest and social bonding is found in both theory and previous research. From a theoretical standpoint, the combining of social interest with social bonding more fully captures the entirety of Adler's original concept. Current methods of measuring social interest have been criticized for only addressing a portion of Adler's multifaceted construct (Ansbacher, 1992; Bass, Curlette, Kern, & McWilliams, 2002). Along with interest in the welfare of others, Adler described social interest as connectedness with the greater human community (Ansbacher, 1992).

This additional aspect of the construct has been denoted by some as too metaphysical (Ansbacher, 1992), yet relates to a broader sense of connection and harmony with the universe, and requires a more external consideration. The fullness of Adler's writings about social interest is not consistently assessed in current social interest measures and may contribute to mixed findings. By coupling social interest with social bonding, both internal and external aspects are considered. Thus theory supports the notion that such an approach more closely mirrors Adler's original conceptualization of social interest.

In addition to being supported by theory, the proposition to integrate social interest and social bonding is supported by previous empirical endeavors. Although previous researchers have not combined social bonding and social interest, social bonding has been combined with other predictors with promising results. These internal elements include one's level of self-control (DeLi, 2004; Veenstra et al., 2010), personal identity and self-feelings (Kaplan & Cheng-Hsien, 2005), and aspirations and expectations (Ozbay, 2008). Thus, by integrating social bonding theory with additional predictors, researchers have strengthened predictive models. It was hypothesized that the same would be true in this study.

In summary, a need exists for an integrated approach to examine collegiate substance abuse that accounts for both internal and external elements. Social interest addresses an internal characteristic comprised of one's concern for the welfare of others (Ansbacher, 1992) while social bonding provides a thorough conceptualization of four external elements (Hirschi, 1969). By coupling these two as predictors, both the internal characteristics of the individual and her or his external elements are considered. This

provides a more comprehensive conceptualization of substance abuse and can be used to better inform interventions and treatment for college students. Further, there is both theoretical and empirical motivation for the integration of social interest and social bonding. Social bonding addresses the facets of social interest described by Adler that often are neglected in research (Ansbacher, 1992). In addition, social interest satisfies the complementary internal construct that has previously strengthened predictive models that included social bonding as a predictor. Thus, the integration of the two constructs provides a more comprehensive conceptualization of substance abuse than the examination of the constructs in isolation. By combining social interest and social bonding, college student hazardous drinking and marijuana use is better understood.

Purpose of the Study

In light of the prevalence of college student substance abuse, coupled with the lack of an integrated explanation of the behavior incorporating both internal and external elements, this study was designed to explore the relationship between social interest and social bonding and college student hazardous drinking and marijuana use. The present study contributes to the literature by examining two empirically supported constructs, namely social interest and social bonding, for a potentially more comprehensive prediction of college student substance abuse.

The present study had three primary aims: 1) to explore the extent to which social interest and social bonding in combination account for variance in college student hazardous drinking and marijuana use, 2) to examine group differences with regard to social interest and social bonding in groups of college students who engage in hazardous

drinking only, marijuana use only, neither, or both, and 3) to investigate the relationship between social interest and social bonding. The overarching purpose of this study was to contribute to the explanation of two forms of substance abuse prevalent on college campuses (alcohol abuse and marijuana use) by utilizing an integrated approach combining social interest and social bonding. Social interest was assessed using the Sulliman Scale of Social Interest (SSSI; Sulliman, 1973) and, similar to other researchers (Durkin, Wolfe, & Clark, 1999) social bonding was examined by assessing six social bonding variables representing the four elements of the social bond: parental attachment, commitment to higher education, religious commitment, involvement, acceptance of conventional beliefs, and respect for authority. It was proposed that an approach integrating social interest and social bonding would better predict collegiate substance abuse, and thereby aid professionals in the development of more effective treatment, interventions, and prevention programs. Thus, the present study was an effort to better explain hazardous drinking and marijuana use by employing both social interest and social bonding to inform prevention and intervention efforts for college students.

Need for the Study

Substance abuse is a concerning and increasingly prevalent behavior on college campuses. Specifically, researchers at the CORE Institute (2008) indicated that alcohol and marijuana are reported to be the most common substances used by undergraduate students. In a study of college students, researchers determined that , 42% reported being drunk in the 30 days prior to the survey and 37% engaged in binge drinking in the prior 2 weeks (Johnston et al., 2010). In addition, 33% reported using marijuana in the past year

(Johnston et al., 2010). The abuse of alcohol and marijuana among college students has been associated with negative consequences such as violence (Cogan & Ballinger, 2006; Parks et al., 2008), risky sexual behavior (Broman, 2007), and impaired academic performance (dePyssler, Williams, & Windle, 2005; Jennison, 2004).

Social interest and social bonding offer a more thorough explanation of this problematic behavior, but, until the current study, research was limited in this area. Both Adler (1956) and Dreikurs (1990) provided a theoretical basis for the investigation of social interest and substance abuse by positing that those with serious drug and alcohol problems are deficient in social interest and avoid the use of cooperation in their efforts to solve life tasks. Therefore, the tenets of Adlerian theory support the examination of social interest with issues pertaining to substance abuse that can be applied to college populations. Empirically, social interest has been explored in studies with college student samples (Guzick, Durman, Groff, Altermatt, & Forsyth, 2004; Huber & Coleman, 1986; Leak, 1982; Watkins & Blazina, 1994) and with regard to substance abuse issues (Chaplin & Orlofsky, 1991; Colker & Slaymaker, 1984; Mozdierz et al., 2007; Mozdierz & Semyck, 1980). Few researchers, however, have assessed social interest and substance abuse with college student samples and these results have been mixed (Keene & Wheeler, 1994; Lewis & Wachter, 2006; Lewis & Watts, 2004). Therefore, there is a need for continued research to better inform interventions.

A second limitation in the literature relates to the modest support found for social bonding in the study of collegiate substance abuse. Social bonding has been explored both in relation to substance abuse (Akers & Lee, 1999; Downs, Robertson, & Harrison,

1997; Ford, 2005; Gilmore, Rodriguez, & Webb, 2005) and with college student samples (Fukushima et al., 2009; Vowell & Chen, 2004). More specifically, researchers have empirically examined the role of social bonding in explaining college student binge drinking (Durkin et al., 1999), alcohol related problems (Sun & Longazel, 2008), and illicit drug use (Seredycz & Meyer, 2005) but have produced only limited support for bonding elements as predictors. Continued research in this area is warranted to provide a more thorough understanding of the issue.

A third limitation in the research literature is that social interest and social bonding have been considered in isolation, rather than in an integrated approach. Although there is empirical support for both social interest and social bonding as predictors of substance abuse, the constructs had yet to be integrated. Because social interest addresses an internal characteristic comprised of one's concern for the welfare of others (Ansbacher, 1992) and social bonding provides a thorough conceptualization of four external elements (Hirschi, 1969), combining the two constructs accounts for more variance in college student hazardous drinking and marijuana use by accounting for both interpersonal and intrapersonal elements. This provides a more comprehensive conceptualization of college student substance abuse which can be used to better inform interventions.

Statement of the Problem

The prevalence of substance use is increasing on college campuses with regard to both problem drinking (Bulmer, Irfan, Mugno, Carton, & Ackerman, 2010) and marijuana use (Mohler-Kuo, Lee, & Wechsler, 2003). Further, collegiate substance abuse

poses many threats to the well-being of college students. Both alcohol abuse and drug use in college populations have been associated with increased violence (Cogan & Ballinger, 2006; Parks et al., 2008), specifically intimate partner violence (Nabors, 2010; Simons et al., 2008), risky sexual behavior (Broman, 2007), and decreased academic performance and study practices (dePyssler et al., 2005; Jennison, 2004). In terms of dual substance use, college students who report using both alcohol and marijuana have been found to be younger, drink more per occasion, and have more alcohol and drug related problems than those who only use alcohol (Shillington & Clapp, 2006). Therefore, the continued study of alcohol abuse, marijuana use, and dual substance use is relevant with regard to the well-being of collegiate populations.

To this end, the present study incorporated two relevant, empirically supported constructs previously examined only separately. Both social interest and social bonding have been found to be predictive of substance abuse, but the two constructs have always been examined independent of the other. Because social interest is internal and social bonding is external, it was proposed that the inclusion of both could result in a stronger predictive model of collegiate hazardous drinking and marijuana use.

Research Questions

This study was designed to investigate the relationships between social interest, social bonding, and college student hazardous drinking and marijuana use. To this end, the following research questions were addressed:

Research Question 1: What portion of the variance in college student self-reported hazardous drinking behavior can be explained by social interest and social bonding above and beyond the portion of variance explained by demographic predictor variables?

Research Question 2: Are there significant mean differences in social interest and social bonding between groups of college students who engage in marijuana use including nonusers, past users, occasional users, frequent users, and daily users?

Research Question 3: Are there significant mean differences in social interest and social bonding between groups of college students who 1) do not use marijuana and are not hazardous drinkers, 2) do not use marijuana and are hazardous drinkers, 3) use marijuana and are not hazardous drinkers and, 4) use marijuana and are hazardous drinkers?

Research Question 4: What effect do social interest and social bonding have on the prediction of group membership in the following four groups of college students: (a) those who do not use marijuana and are not hazardous drinkers, (b) those who do not use marijuana and are hazardous drinkers, (c) those who use marijuana and are not hazardous drinkers, and (d) those who use marijuana and are hazardous drinkers?

Definition of Terms

For the purposes of the present study, the following definitions were used to operationalize key constructs:

Social interest was defined as one's interest in the welfare of others and a sense of belonging within the greater human community (Ansbacher, 1992). Social interest was measured by the Sulliman Scale of Social Interest (SSSI; Sulliman, 1973) which is comprised of a total score and two subscales: (a) amount of concern for and trust in

others, and (b) confidence in oneself and view of the world. In light of the strong psychometric data supporting the total score of the SSSI and limited psychometric data pertaining to the subscales, the present study examined only the full scale score of the SSSI in the four research questions. The two subscales were included in a bivariate correlation preliminary analysis on all study variables.

Social bonding describes an individual's bond with society as measured by Durkin et al.'s (1999) adaptation of Hirschi's (1969) measure of social bonding. Social bonding as a construct was first studied by Travis Hirschi (1969) who described four elements of social bonding: attachment, commitment, involvement, and belief.

Attachment refers to sensitivity to the opinions of others and close affectional ties to significant individuals such as parents and peers (Hirschi, 1969).

Commitment is defined as investment in conventionality which creates a sense of fear of negative consequences, costs, or risks that come with breaking conventional rules (Hirschi, 1969).

Involvement refers to the amount of time and energy consumed by conventional activities such as school and work (Hirschi, 1969).

Belief is defined as the personal endorsement of the common value system and conventional norms adopted by society (Hirschi, 1969).

In the present study, attachment was measured by one variable comprised of items measuring one's Parental Attachment. Commitment was measured by two variables: Commitment to Education and Commitment to Religion. Involvement was measured one variable comprised of items assessing involvement in studying, employment, and

extracurricular activities. Finally, belief was measured by two variables: Respect for Authority and Acceptance of Conventional Beliefs. Therefore, social bonding was examined by assessing these six variables in relation to collegiate hazardous drinking and marijuana use.

Hazardous drinking is a classification of problem drinking and was assessed by the Alcohol Use Disorders Identification Test (AUDIT) developed by the World Health Organization (Saunders et al., 1993). Individuals who score an 8 or higher (out of a possible 40) on the AUDIT are classified as hazardous drinkers (Cherpitel, 1997).

Marijuana use in the present study referred to any means of ingesting cannabis. Amount of use was measured through a frequency report of current marijuana use as well as an assessment as to whether marijuana has been used over the lifetime. These two items categorized participants into groups of nonusers, past users, occasional users, frequent users, or daily users.

College student was defined as undergraduates in emerging adulthood (between ages 18-25) registered as full-time students at a four-year institution. This age-range is consistent with the definition of emerging adults (Arnett, 2005). Additionally, according to university policy, full-time enrollment status is achieved when undergraduate students are enrolled in at least 12 credit hours. Therefore, for the purposes of the current study, college students were those undergraduates between the ages of 18 and 25 who were enrolled in at least 12 credit hours.

Organization of the Study

This study is presented in five Chapters. Chapter One offers an overview of the problem as well as research related to the association between social interest, social bonding, and college student substance abuse. Further, the purpose of the study, statement of the problem, research questions, need for the study, and definition of terms are provided in Chapter One. Chapter Two details the research literature relevant to the variables in the study including social interest, social bonding, and college student alcohol abuse and marijuana use. In Chapter Three, the methodological approach and data analysis procedures are discussed. This Chapter also includes research hypotheses, a description of participants, instrumentation, and data collection procedures. Chapter Four explores the results of the study. Finally, Chapter Five contains the conclusions related to social interest and social bonding drawn from the study results as well as a discussion of implications for counselors working with college student populations and recommendations for future research.

CHAPTER II

REVIEW OF RELEVANT LITERATURE

The purpose of the current study and specific research questions that were addressed were described in Chapter One. This chapter includes a review of literature pertinent to collegiate substance abuse and the need for a more thorough understanding of individual characteristics that predict hazardous drinking behaviors and marijuana use. Chapter Two begins with an examination of the prevalence of alcohol abuse and marijuana use among college students as well as an investigation of negative consequences. Social interest and social bonding is then explored as contributing factors to the prediction of collegiate substance abuse. Finally, support for the need join the two constructs, social interest and social bonding, and implications of their integration is presented. The chapter will conclude with a summary of the review of relevant literature.

Prevalence of Substance Abuse

It is indisputable that collegiate substance abuse demands the continued attention of counseling researchers. The prevalence of drug and alcohol abuse among college students alone is cause for concern as researchers reveal escalating trends in patterns of substance abusing behavior (Mohler-Kuo, Lee, & Wechsler, 2003; Wechsler, Lee, Kuo, Seibring, Nelson, & Lee, 2002). One prominent source for substance abuse information is The Core Institute, which conducts surveys monitoring the drug and alcohol use of college students at two and four year institutions across the United States (Core Institute,

2008). In 2008, researchers found that the prevalence of drug and alcohol abuse among college students was high with 46.1% of students indicating that they engaged in binge drinking in the 2 weeks prior to the survey and 65.4% of underage students reporting that they consumed alcohol in the 30 days prior to the survey (Core Institute, 2008). Further, 31.1% of the college student sample indicated using marijuana in the year prior to the survey. Thus, alcohol and marijuana appear to be the most commonly abused drugs on college campuses (Core Institute, 2008). These findings are mirrored by other researchers who have studied national collegiate substance abuse. For example, The Monitoring the Future Survey has been used to examine drug and alcohol trends among adolescent, college, and adult populations within the United States (Johnston, O'Malley, Bachman, & Schulenberg, 2010). These researchers found an annual prevalence of 36% for illicit drug use in 2009. The most widely abused illegal drug was marijuana with 33% of college students in the sample reporting the use of the drug in the year prior to the survey (Johnston et al., 2010). In addition, 37% of the sample reported binge drinking in the 2 weeks prior to the survey while 42% indicated that they had been drunk within the past 30 days (Johnston et al., 2010) Thus, a further examination of alcohol abuse and marijuana use within college institutions is necessary to understand the gravity of substance abuse among students.

Alcohol Abuse

Because college students consume more alcohol than their non-college age peers, alcohol abuse on college campuses has been widely studied (Johnston et al., 2010). The collegiate environment includes sporting events, fraternities and sororities, athletic

organizations, and distance from one's family of origin, all of which make college campuses conducive to the abuse of alcohol. For example, those who reported drinking alcohol typically drink more on a college game day than they did at their last social gathering (Glassman, Werch, Jobli, & Bian, 2007), sorority and fraternity members are consistently found to consume more alcohol and marijuana than their non-Greek counterparts (Barry, 2007; Bell, Wechsler, & Johnston, 1997; Caron, Moskey, & Hovey, 2004; Theall et al., 2009; Wechsler, Dowdall, Davenport, Castillo, 1995), and those involved in athletic organizations engage in higher quantities of drinking than non-athletes (Wechsler, Davenport, Dowdall, Grossman, & Zanakos, 1997).

The implications of the prevalence of alcohol abuse are profound. Researchers have found that 41% of college students who drank alcohol met the DSM-IV criteria for alcohol abuse (Theall et al., 2009). Further, researchers studying 462 undergraduates determined that 53% of the sample qualified as hazardous drinkers according to the Alcohol Use Disorders Identification Test (AUDIT) (DeMartini & Carey, 2009). Thus, the pervasiveness of alcohol abuse among college students is clear and merits further investigation.

Marijuana Use

Reportedly, the most frequently used illegal drug among college students is marijuana (Core Institute, 2008). Researchers have found that 98% of those undergraduate students who use illegal drugs use marijuana (Shinew & Parry, 2005). The percentage of students using illegal drugs such as marijuana is considerably smaller than those who abuse alcohol, yet marijuana use remains a consistent concern on college

campuses. In a study of marijuana trends across a 7 year period at 119 colleges in the United States, researchers found increases in the percentage of marijuana use in the 30 days prior to the survey, year prior to the survey, and lifetime use (Mohler-Kuo et al., 2003). Additionally, researchers found that 98% of those who used marijuana engaged in another unhealthy substance using behavior such as smoking cigarettes or binge drinking (Mohler-Kuo et al., 2003). A review of marijuana research reveals that delta-9-tetrahydrocannabinol (THC) levels in confiscated marijuana in the United States have been steadily increasing over time (McLaren, Swift, Dillon, & Allsop, 2008; Schwarts, 2002). THC is the element producing the strongest psychoactive effect in the drug and is used as a measure for potency of the substance. Therefore, marijuana is a concern as it continues to be the most frequently used illegal drug in collegiate settings and the potency of the substance is increasing.

Dual Substance Abuse

Other researchers have examined the combined use of both alcohol and marijuana. Shillington and Clapp (2006) examined a sample of 1,113 college students who drank alcohol and found that 28.8% engaged in marijuana use as well. These dual substance using students were found to be younger, reported more alcohol and drug problems, and drank more per occasion than those who used alcohol only (Shillington & Clapp, 2006). In addition, those individuals with both alcohol and drug dependence were found to have significantly more comorbid psychiatric disorders than those with alcohol dependence alone (Dick et al., 2007).

Negative Consequences of Collegiate Substance Abuse

In addition to prevalence data, the negative consequences associated with collegiate substance abuse are noteworthy. The gravity of the problematic behaviors associated with collegiate drug and alcohol abuse increase the need for further study in this area. The Core Institute (2008), in their study of 77,481 college students from 2 and 4 year institutions across the United States, found that 37% of students experienced some type of public misconduct in the year prior to the survey as a result of drug and alcohol use, including police intervention, DUI citations, fighting, and vandalism. Further, they found that 25% of the sample reported experiencing a serious personal problem as the result of alcohol and drug use such as being injured, sexually assaulted, suicidality, or unsuccessful attempts to stop using (Core Institute, 2008). It seems clear from the literature, however, that the list of possible negative consequences stemming from collegiate alcohol and marijuana use extends further and includes risky sexual behavior and victimization, poor academic performance, driving under the influence, and aggression and violence.

Risky Sexual Behavior

Heavy drinking and marijuana use appear to increase risky sexual behaviors among college students. Broman (2007) found that number of days engaged in heavy drinking, as well as marijuana use, correlated with increases in the number of sexual partners and an increased likelihood for unprotected sexual activity. Similarly, other researchers also have found that alcohol use among college students is associated with decreased likelihood to use condoms during sexual activity (Certain, Harahan, Saewyc, &

Flemming, 2009; Poulson, Eppler, Saterwhite, Wuensch, & Bass, 1998). Caldeira et al. (2009) studied 386 sexually active college females of which 60.2% reported having sex under the influence of alcohol or drugs. Additionally, those who drank more frequently or engaged in drug use were at risk for having multiple sexual partners (Caldeira et al., 2009). Thus, the association between alcohol and drug use, and risky sexual behaviors at the collegiate level, is well documented in the literature.

Victimization

Another important consideration of collegiate alcohol and drug use is the risk of sexual victimization. Offender and victim alcohol use is associated with increased occurrences of sexual victimization of female college students (Ullman, Karabatsos, & Koss, 1999). In one study, the majority of undergraduate women who were incapacitated during sexual assault used drugs or alcohol prior to the attack (Krebs, Lindquist, Warner, Fisher, & Martin, 2009). It is important to emphasize that the relationship between victim drug or alcohol use and sexual assault does not imply victim responsibility. Instead, this research highlights another risk of collegiate substance abuse that may result from a diminished capacity to recognize dangerous situations. Messman-Moore, Coats, Gaffey, and Johnson (2008) found further support for the relationship between substance use and victimization as they determined that college women who experienced rape had higher levels of alcohol use than non-rape victims. Additionally, they uncovered a significant correlation between recent marijuana use and sexual victimization as college women who experienced rape reported more recent marijuana use than non-rape victims (Messman-Moore et al., 2008). These findings suggest a positive association between collegiate

substance abuse and the experience of sexual victimization, increasing the need for prevention efforts related to drug and alcohol abuse.

Poor Academic Performance

Another detrimental outcome of collegiate alcohol and marijuana abuse is the deterioration of academic performance. Researchers have found students with a grade point average of “B” or below are more likely to report using marijuana than students with a grade point average of a “B+” or higher (Bell et al., 1997). Similarly, binge drinking has been linked to a student’s view of academic work as well as grade point average and hours spent studying (Wechsler et al., 1995). Further, researchers at the Core Institute (2008) found that 20.8% of college students performed poorly on a test or project and 28.1% missed class due to alcohol or drug use in the year prior to the survey. Students who engaged in binge drinking, in contrast to non-binge drinkers, were more likely to view academic work as “somewhat important” or “not at all important,” spent fewer hours studying, and maintained a grade point average lower than a “B” (Wechsler et al., 1995). Other researchers also have found binge drinking to be inversely correlated with cumulative grade point average (DeBernard, Spielmans, & Julka, 2004). Additionally, effective study behaviors have been correlated with less alcohol consumption among African American college students (dePyssler et al., 2005).

These academic problems have long-term implications. Jennison (2004) interviewed individuals during college and again 10 years later, and found that 25% of males and 38% of females who met criteria for alcohol dependence according to the

DSM-IV at the 10-year follow up interview had dropped out of college (Jennison, 2004). That is, alcohol use in college is related to both academic attrition and future dependency.

Driving Under the Influence

The lethality of alcohol and drug abuse also is manifested in poor decision making, such as driving under the influence, which could result in serious injury. For example, McCarthy, Lynch, and Pederson (2007) surveyed 599 college students and found that 43% of the sample drove after drinking while 13% drove after using marijuana. Of those students who identified as alcohol drinkers, 55% reported driving after using the substance. Similarly, of those students who reported using marijuana, 47% indicated driving after using. In addition, researchers at the Core Institute (2008) found that 22.3% of college students in their study drove while under the influence of drugs or alcohol in the year prior to the survey. This negative consequence of collegiate substance abuse is particularly concerning in light of the harm potential for the driver and others.

Aggression and Violence

Another dangerous outcome of collegiate substance abuse is physical assault and aggressive acts. A significant relationship has been established between cannabis use and intimate partner violence in a sample of college students. For example, among a sample of 1,938 college students, Nabors (2010) found that those who used cannabis were 35% more likely to physically assault their intimate partner when compared to non-users. Similarly, Stoner (1988) studied 497 undergraduate students and discovered a significant relationship between marijuana use and anger. The researcher found that students who

used marijuana frequently engaged in more aggressive behavior than students who did not use or only used occasionally (Stoner, 1988).

Alcohol use also has been linked to violence and aggression. Researchers have found that college women engaged in more sexual, physical, and verbal aggression on days in which they drank heavily than days in which they did not consume alcohol (Parks, Hsieh, Bradizza, & Romosz, 2008). Further, in one study, college students who engaged in incidents of physical aggression at bars or parties reported that the consumption of alcohol increased the severity of the aggression exhibited during the encounters (Tremblay, Graham, & Wells, 2008). Therefore, college students have been found to engage in increased acts of violence and physical aggression as the result of using substances. The negative repercussions of alcohol abuse and marijuana use among college students are abundant and emphasize the need for a more thorough understanding of the factors contributing to the behavior.

Efforts to Prevent and Treat Collegiate Substance Abuse

In light of the prevalence of collegiate substance abuse and associated negative consequences, numerous efforts have been made to prevent and treat the phenomenon. Most universities offer general alcohol education programs (Wechsler et al., 2000), yet institutions vary considerably in prevention and intervention efforts beyond a basic educational program. The need for advancement in the research used to inform interventions and the prevention of collegiate substance abuse is clear, as many efforts are unable to consistently produce desired outcomes. A study of institutions awarded a grant from the Fund for the Improvement of Postsecondary Education (FIPSE) to use

toward collegiate alcohol and drug prevention programs illuminates the need for more informed intervention strategies (Licciardone, 2003). Licciardone examined 82 institutions across the United States and discovered that students at FIPSE institutions had an increased desire for the availability and use of drugs at parties, more use of tobacco, marijuana, and cocaine, and higher arrests due to driving while intoxicated. FIPSE institutions were more successful in the area of promoting awareness related to the programs offered on campus to prevent drug and alcohol use, yet had few other favorable outcomes (Licciardone, 2003).

Researchers have highlighted the need for better research and intervention efforts to address drug and alcohol abuse on college campuses. For example, Lee, Neighbors, Kilmer, and Larimer (2010) explored the utility of a web-based approach for collegiate marijuana prevention. This web-based program provided personalized feedback using Motivational Interviewing techniques. The researchers studied 341 college students randomly assigned to either an intervention group (receive the personalized feedback intervention) or control group (assessment only). Students completed a baseline survey followed by three and six month follow-ups. Results indicated that the web-based intervention did not produce overall decreases in marijuana use or associated consequences (Lee et al., 2010). Although web-based programs offer a more cost-effective modality than face-to-face programs, to date there are concerns related to their effectiveness.

Similarly, attempts to curb collegiate alcohol abuse also have been empirically examined, often with mixed results. For example, some researchers have found support

for the efficacy of computer-delivered interventions in the reduction of alcohol use (Carey, Scott-Sheldon, Elliott, Bolles, & Carey, 2009), while others have found computer-delivered interventions relatively ineffective (Donohue, Allen, Maurer, Ozols, & DeStefano, 2004).

Interventions used to influence social norms by introducing college students to more realistic alcohol statistics, once very popular, have been found to be ineffective (Polonec, Major, & Atwood, 2006). Researchers studying the effect of a “Party Smart Campaign” advertising the message that most students have between 0 and 4 drinks when they party, found that only 27.4% of students believed the message and it had little effect on heavy drinkers (Polonec, Major, & Atwood, 2006)

Although some generic intervention and prevention efforts have been found to be relatively ineffective, targeted and individual interventions have produced more promising results. Individual-oriented interventions based on student risk factors for heavy drinking have been subject to more controlled research endeavors and have produced more evidence of efficacy (Larimer, Lilmer, & Lee, 2005). Many institutions do not specifically target high-risk students or campus organizations, however, in the development of prevention and intervention programs. Wechsler et al. (2000) studied 734 4-year universities across the United States and found that only 59% of schools with an athletic program had alcohol prevention programs that targeted athletes, and only 67% of schools with fraternities and sororities had alcohol programs that targeted students involved in Greek organizations, despite the fact that these 2 groups have been found to have more alcohol-related negative consequences. Thus, the need for more

individualized, targeted interventions seems evident. Rather than focusing research endeavors on prevention and intervention programs for the general collegiate population, the study of individual characteristics and personal risk-factors may prove to increase the efficacy of prevention efforts. With regard to the present study, the examination of social interest and social bonding contributes to a more thorough understanding of individual risk factors related to collegiate substance abuse and, thus, providing information to better inform interventions and prevention programs.

Current Explanations for Substance Abuse

In order to conceptualize collegiate substance abuse and treatment efforts, various explanations of the behavior must be considered. From a developmental perspective, some forms of substance abuse during the college years can be understood as a means by which to fulfill Erikson's psychosocial stage of intimacy versus isolation (Qin & Comstock, 2005). Undergraduate students report being motivated to engage in "nightclubbing" in order to socialize with friends and seek romantic partners in addition to the desire to become intoxicated (Reingle, Thombs, Weiler, Dodd, O'Mara, & Pokorny, 2009). Thus the use of substances may be viewed as a way to meet developmental needs of intimacy and socialization. Further, trends in alcohol consumption during college indicate that the majority of high risk drinkers "mature out" of the behavior as they transition from college to the workplace (Campbell & Demb, 2008; Jackson, Sher, Gotham, & Wood, 2001). The term, "mature out" refers to the process by which individuals cease to engage in problematic drug and alcohol use (Winick, 1962). However, the process of maturing out does not impact all high risk

drinkers within the colleges setting. In a study of alcohol drinking patterns, researchers found that 41% of high risk drinkers exhibited a decrease in alcohol consumption over their four years in college, while 59% remained stable as high risk or very high risk drinkers (Johnsson, Leifman, & Berglund, 2008). Therefore, a developmental perspective may serve as a means to conceptualize a portion of substance abuse among college students, yet the exploration of other perspectives is necessary to fully understand the phenomenon.

Beyond a developmental perspective, a variety of models exist in the literature to best explain the etiology of addiction, and each conceptualization is complete with its own implications for effective intervention and prevention efforts. The treatment of drug and alcohol abuse hinges on an accurate understanding of the behavior itself. Most widely known perspectives of substance abuse include biological, sociocultural, psychological, and, more recently, biopsychosocial explanations. Each model presents advantages and challenges when addressing drug and alcohol use in the general population. Current trends towards a biopsychosocial model of addiction may provide a more holistic and valuable conceptualization of substance abuse. Social interest levels and strength of social bonding add to the effectiveness of this multifaceted perspective when applied to collegiate populations.

Biological Explanation

The conceptualization of substance abuse as a disease is the driving force behind popular support groups such as Alcoholics Anonymous and Narcotics Anonymous. In 1956, the American Medical Association embraced the classification of alcoholism as a

disease, an act that spurred a host of subsequent research endeavors exploring genetic predispositions to addiction. Twin, adoption, and animal studies have provided the majority of empirical support for the biological explanation of substance abuse (Agrawal & Lynskey, 2008; Hiroi & Agatsuma, 2005; Mayfield, Harris, & Schuckit, 2008). Of particular interest, an examination of twin studies related to alcohol dependence indicated 50-70% heritability while cannabis dependence was found to have 34-78% heritability (Agrawal & Lynskey, 2008). Although no single gene has been identified as the contributing biological factor to substance abuse, research supports a genetic component to drug and alcohol abuse. Relatives of an individual with alcohol dependence are four-times more likely to develop alcohol dependence themselves (Mayfield, Harris, & Schuckit, 2008). Further, addictions neurobiology researchers purport that drug use alters the functioning of the reward system in the brain leading to excessive use (Koob & Simon, 2009). Specifically, malfunctions in the dopamine system in the brain lead to a condition known as Reward Deficiency Syndrome (RDS), which contributes to the propensity to addiction (Blum et al., 2008). Addictive behaviors, such as the use of drugs, alcohol, gambling, and sex, cause a release of dopamine. Therefore, individuals with RDS are genetically predisposed to seek out these experiences to compensate for their deficiency (Blum et al., 2008). Neurobiology researchers propose that malfunctions in the dopamine system, and the subsequent reactions of neurotransmitters, contribute to drug seeking and using behaviors (Koob & Simon, 2009). Within the biological explanative framework, environmental factors are considered to be triggers that facilitate the expression of the genetic predisposition. For example, Agrawal et al. (2009) found

support for the interaction between age of first drink and genetic influences on alcohol dependence among a sample of 6,257 male and female twins. As the age of first drink decreased, the heritable influence on alcohol dependence symptoms increased, identifying certain environmental factors that serve as facilitators of the genetic expression (Agrawal et al., 2009). Critics of the biological model of substance abuse fault the perspective as downplaying the role of personal responsibility, ignoring individual differences, and existing on conflicting scientific evidence (Walters, 1992; Walters, 2002). In spite of these critiques, the biological perspective continues to influence the conceptualization and treatment of individuals engaged in substance abusing behaviors.

Sociocultural Explanation

The sociocultural perspective of substance abuse suggests that aspects of one's culture and societal contexts influence patterns of drug and alcohol use. This conceptualization emphasizes social structure, social norms, expectancies, customs, and environmental factors. Therefore, sociological conceptualizations emphasize systemic changes to decrease substances abuse behaviors, rather than focusing only on individual treatment.

One component of the sociocultural explanation is social norming. Particularly among college students, the social norms perspective has contributed to the understanding of substance abuse. Consistently, researchers find that students believe more students are using drugs and alcohol than is actually the case (Felt et al., 2008; LaBrie et al., 2009). In fact, in one study of 235 undergraduate students, Lewis and Clemens (2008) found the normative beliefs pertaining to the alcohol and marijuana use

of others accounted for 62.8% of the variance in alcohol use intensity and 41.8% of the variance in marijuana use (Lewis & Clemens, 2008). Neighbors et al. (2008) also discovered that college students' perceptions of the marijuana use of their friends were most strongly associated with their choice to use marijuana. Thus, within the sociocultural conceptualization, the normative beliefs pertaining to substance abuse, which are fostered by societal influences, are contributing factors to addiction.

Additionally, the sociocultural explanation of substance abuse considers the context of one's background and social network on substance abusing behaviors. Social modeling in various groups defined by culture, socioeconomic status, religion, age, and geographic location contribute to the substance abuse of the individual. For example, in a comparison study of Jewish college students who drank in the United States versus those who drank in Israel, researchers found Jewish students in the United States to have more hangovers, incidents in which they drove after drinking, and class absences due to drinking (Engs, Hanson, & Isralowitz, 1988), suggesting that the cultural context of the United States negatively impacted alcohol related behavior. Additionally, in the study of French and Dutch adolescents, researchers found that although Dutch adolescents experienced more of the problems being studied, French adolescents more often attributed the cause of the problems to drug and alcohol use (Knibbe et al., 2007). France and the Netherlands exhibit different degrees of informal social control and criminalization pertaining to substance abuse and these cultural differences influence the ascription of problems to drug and alcohol abusing behaviors. Support was found for the notion that because French adolescents experience more intensive social controls over

substance abuse, they are more likely to attribute their problems to drug and alcohol use (Knibbe et al., 2007). Thus, societal and cultural components are associated with substance abuse and related problematic behaviors, providing support for the sociocultural explanation.

Psychological Explanation

The belief in underlying psychological issues, which serve to fuel substance abuse, is the premise of the psychological explanation. From this perspective, drug and alcohol use is a coping strategy to avoid or escape the discomfort associated with symptoms of mental illness or psychological distress. The prevalence of co-occurring mental health and substance abuse disorders is well accounted for in the literature. The Substance Abuse and Mental Health Services Administration (SAMHSA) (2010) reported that 19.7% of the 45.1 million adults with mental illness in the United States met criteria for either substance abuse or substance dependence in 2009. Further, the researchers determined that adults with mental illness were more likely to use illicit drugs when compared to those adults without mental illness (26.5% compared to 11.6% respectively) (SAMHSA, 2010). The prevalence of co-occurring substance abuse and mental health disorders is not restricted to adults only. SAMHSA (2010) determined that 8.1% of the youth in the United States suffered a major depressive episode in the year prior to the survey and, of these, 35.7% engaged in illicit drug use. Additionally, in the study of incarcerated adults in the United States, researchers determined that 39% of the 660 male inmates in the study suffered from both mental health and substance abuse problems (Hiller et al., 2005). With regard to specific co-occurring disorders, researchers

have found that approximately 60% of cocaine dependent males have depressive symptoms (Moss & Werner, 1992). Cocaine users in this category claimed to be self-medicating by using the substance as a way to decrease feelings of stress and depression (Moss & Werner, 1992). Further, researchers have found that those with social phobias engage in more hazardous drinking and marijuana use than those without the diagnosis (Stein, Anderson, & Anthony, 2007). Therefore, the prevalence of concurrent mental health and substance abuse disorders in the United States is well documented.

Beyond prevalence counts, researchers have found adult substance abuse to correlated with early traumatic events such as serious accidents or the death of a family member (Grella, Stein, & Greenwell, 2005), childhood sexual abuse (Clay, Olsheski, & Clay, 2000; Lee, Lyvers, & Edwards, 2008), and childhood physical and emotional abuse (Nyamathi, Longshore, Keenan, Lesser, & Leak, 2001). Researchers who have studied the collegiate experience have found a significant interaction between dissociation scores and problem drinking among those who had experienced childhood sexual abuse (CSA) (Klanecky, Harrington, & McChargue, 2008). In one study of 156 college women, support for a moderating effect of CSA on the relationship between dissociation scores and blackouts caused by problem drinking illuminates the fact that alcohol may be used as a dissociation coping strategy for survivors of childhood abuse (Klanecky, Harrington, & McChargue, 2008). From the psychological perspective of substance abuse, drug and alcohol using behaviors function as a means to cope with distressing psychological issues.

Biopsychosocial Explanation

A conceptualization of substance abuse that includes biological composition, psychological features, and environmental aspects is known as the biopsychosocial perspective. From this viewpoint, the complexities and multiple layers of drug and alcohol use are embraced while reductionist or simplistic viewpoints are avoided. Due to the complexity of substance abuse, a comprehensive understanding requires the collaboration of several disciplines (Dean, 2001). Using an interdisciplinary approach, drug or alcohol abuse can be understood in light of genetic predispositions, social contexts, cultural influences, personality traits, and psychological features (Dean, 2001).

Researchers using the biopsychosocial perspective have proposed the notion of an addiction syndrome, positing that multiple antecedents from one's biology, psychological composition, and environmental factors interact to create a syndrome of addiction (Shaffer, LaPlante, LaBrie, Kidman, Donato, & Stanton, 2004). From this perspective, genetically predisposed individuals, such as those with Reward Deficiency Syndrome (RDS), are influenced by psychosocial factors, such as psychopathology, low parental monitoring, and high impulsivity, which contribute to the manifestation of the addiction syndrome (Shaffer et al., 2004).

Despite the growing acceptance of the biopsychosocial perspective of substance abuse among researchers, the use of the explanation in practice remains limited. In the study of the assessment procedures of 117 substance abuse treatment facilities, researchers determined that the institutions assessed more for biological factors of addiction than psychological or social aspects (Samford, Fischer, Reifman, & Caldera,

2000). The researchers used a standardized scoring schema to compare the frequencies of various assessments at the treatment centers comprised of the following categories: A (90-100%), B (80-89%), C (70-79%), D (60-69%), and F (below 60%). Using this categorization, assessments of self concept, employment history, and Axis I diagnoses fell into the D range indicating their use at only 60-69% of the treatment facilities, while cultural issues, gender issues, and Axis II disorders fell into the F category meaning 59% or less of the treatment centers utilized these assessments (Samford et al., 2000). Therefore, although the utility of the biopsychosocial explanation is growing in the field of substance abuse research, it has yet to be fully implemented into practice.

It was proposed that the study of social interest and social bonding as predictors of collegiate substance abuse would further the understanding of the biopsychosocial explanation of drug and alcohol abuse by exploring the innate characteristic of social interest (psychological antecedent) as well as one's degree of bonding to society (sociocultural antecedent). Although the biological component was not specifically addressed in the current study, further research could serve to investigate a biological etiology of low social interest or weak social bonding. The combination of social interest and social bonding was an attempt to account for more variability in substance abuse, furthering the holistic nature of the biopsychosocial explanation of drug and alcohol abuse.

Individual Differences among Collegiate Substance Abuse

Along with a general conceptualization of the etiology of substance abuse, specific focus on individual differences is warranted to best identify students at-risk for

drug and alcohol abusing behaviors. In support of the trends presented by Larimer, Kilmer, and Lee (2005), there is a plethora of research within the field of drug and alcohol abuse literature related to identifying individual differences among college student substance abusers. Researchers have explored a variety of personality characteristics and student profiles in hopes of identifying traits and features most strongly associated with problematic alcohol consumption and marijuana use during college. The present study included two additional constructs, which, when examined in conjunction, served to contribute to this body of literature. Social interest levels and degrees of social bonding add to the complex profiles of collegiate substance abusers by relating to previously identified variables of substance abuse. Historically, a number of factors, including gender, age of first drink, perceptions of social norms, religiosity and/or spirituality, and personality characteristics have been examined with relation to collegiate substance abuse.

Gender

The role of gender cannot be ignored in explorations of collegiate substance abuse. Researchers consistently find that male college students consume more alcohol and use marijuana more frequently than their female counterparts (Brown, Salsman, Brechiting, & Carlson, 2007; DeMartini & Carey, 2009; Johnston et al., 2010; Shinew & Parry, 2005; Wechsler et al., 1997; White, Labourie, & Papadaratsakis, 2005). This coincides with gender related research in other areas of unconventional behavior such as juvenile delinquency. Researchers have found male juveniles to produce more positive drug tests (Gilmore, Rodriguez, & Webb, 2005), view more pornographic material

(Mesch, 2009), engage in more truancy (Veenstra et al., 2010), have more delinquent friends (Ozbay & Ozcan, 2008), and peak earlier in terms of delinquency (Schreck & Fisher, 2004) than females. The need to understand the differences between male and female experiences with unconventional behavior is a critical component to the identification of those at risk for such behaviors.

There is potential for both social interest and social bonding to contribute to the understanding of the gender-related trends in collegiate substance abuse. Researchers have found social interest levels to be higher in females than males (Greever, Tseng, & Friedland, 1973; Kaplan, 1991; Schneider & Reuterfords, 1981). Specifically, Johnson, Smith, and Nelson (2003) examined the effect of gender on the development of social interest in a sample of 813 undergraduate students. The researchers found that females had significantly higher levels of social interest than males ($t(773) = 4.27, p < .001$). Therefore, the study of social interest levels helps to explain, at least in part, the differences between collegiate males and females with regard to hazardous drinking and marijuana use.

Research findings pertaining to social bonding and gender differences are less consistent. Hirschi's (1969) original study consisted of only male participants. Subsequently, however, researchers have found support for the utility of the theory with both males and females (Booth, Farrell, & Varano, 2008; De Li & Mackenzie, 2003; Dukes & Stein, 2001; Durkin et al., 1999; Ford, 2009; Heimer, 1996; Huebner & Betts, 2002; Ozbay & Ozcan, 2008). Importantly, several researchers have determined that bonding elements produce different results in males and females (Booth, Farrell, &

Varano, 2008; De Li & Mackenzie, 2003; Dukes & Stein, 2001; Heimer, 1996; Huebner & Betts, 2002; Ozbay & Ozcan, 2008). Specifically, Huebner and Betts (2002) investigated the relationship between social bonding variables and delinquent behavior among 911 middle and high school students, and found that attachment accounted for more variance in the delinquency of females, while involvement accounted for more variance in the delinquency of males (Huebner & Betts, 2002). Further, Ozbay and Ozcan (2008) tested the impact of social bonding on male and female delinquency, and reported that social bonding elements play a more important role in the explanation of male delinquency than female delinquency. Thus, some researchers suggest that social bonding may impact males and females in different ways. When considered in conjunction with social interest, social bonding provides additional information to help understand gender differences in collegiate substance abuse.

Age of First Drink

In addition to the variable of gender, researchers have sought to explain the relationship between age of first drink and subsequent alcohol abuse behaviors. Several empirical studies support the inverse relationship between age of first alcohol use and negative drinking behaviors (Agrawal et al., 2009; Johnson et al., 2010; von Diemen, Bassan, Fuchs, Szobot, & Pechansky, 2008) as well as other behaviors such as age of first sexual encounter and marijuana use (Rothman, Wise, Bernstein, & Bernstein, 2009). In the study of 143 college freshmen, researchers found age of first intoxication to significantly, negatively, correlate with drinks per day, number of drinking days, and volume of drinks consumed (Johnson et al., 2010). Additionally, in the study of

adolescent males, researchers determined that age of first drink was significantly associated with subsequent substance use disorders in that those who began drinking earlier were more likely to experience drug and alcohol problems (von Diemen et al., 2008). Males have been found to begin drinking earlier than females and white individuals have earlier first drinking experiences than non-white individuals (Rothman, Wise, Bernstein, & Bernstein, 2009). However, contradictory findings exist, which fail to support the significance of age of first alcohol use in explaining the variance of alcohol use disorders (Miles, Winstock, & Strang, 2001). Therefore the age of first drink variable warrants further explanation.

With regard to social interest, the age of first drink is an important consideration. Adler (1976) described social interest as an innate potential that must be developed, particularly during childhood in the family of origin or in the school. He described children with low levels of social interest to be prone to be inattentive in school, unattached to the teacher and unable to make friends. These individuals join with others on the socially “useless side” and engage in criminal acts in response to life’s problems (Adler, 1976). Therefore, early age of onset of alcohol use could be a potential marker of low levels of social interest and attempt to evade the tension caused by life tasks which the individual feels inept to solve in a socially useful way.

Additionally, social bonding may also explain the relationship between age of first drink and subsequent alcohol dependence issues. Hirschi (1969) described those with weak social bonds to be more likely to engage in criminal or delinquent acts. In the event that a child or adolescent is unattached to parents, teachers, and peers, lacks involvement

or commitment to conventional activities, and has not endorsed the conventional beliefs in society, he or she is more likely to engage in behavior deemed unconventional, such as early alcohol use. Therefore, early onset of alcohol use may also be a marker of weak social bonds or an attempt for a youth to meet her or his need for attachment given the weak bond with conventional members of society. By examining social interest and social bonding with regard to collegiate hazardous drinking, age of first alcohol use may be better understood.

Perceptions of Social Norms

The impact of social norms on collegiate substance abuse has been well documented in the literature with regard to both alcohol and marijuana (Ginsberg & Greenley, 1978; Lewis & Clemens, 2008; Lewis & Mobley, 2010; Neighbors et al., 2008; Polonec, Major, & Atwood, 2006; Pomazal & Brown, 1977; Simons, Neal, & Gaher, 2006). The perceptions that close friends are using marijuana (Lewis & Mobley, 2010) or engaging in heavy drinking (Polonec et al., 2006) have clear associations with individual substance abusing behaviors. The exploration of social interest contributes to a more thorough understanding of the social norm phenomenon. Adler (1964) posited that one with a high level of social interest has a sense of belonging within the greater community and “feels himself [sic] a part of the whole” (p. 43). Additionally, these individuals behave in ways congruent with the striving toward an idea form of community (Adler, 1964). Thus, it is possible that those deficient in social interest, and thereby feeling apart from the whole, are more influenced by the behaviors of their friends and peers in hopes of achieving a sense of inclusion. Minimal feelings of connectedness associated with low

social interest may make individuals more prone to engage in substance abusing behaviors modeled by peer groups in order to mimic a sense of belonging.

In addition to social interest, social bonding has utility in the effort to explain the influence of social norms on collegiate substance abuse. In his original study, Hirschi (1969) found that those who committed delinquent acts were more likely to have delinquent friends than those who were not engaged in delinquency. In college populations, researchers also support the fact that marijuana use increases among those college students who identify with and admire marijuana users (Ginsberg & Greenley, 1978). Thus, attachment to peers only serves to curb delinquent behavior when the peers are non-delinquent (Rankin, 1976). By examining social bonding, the identification of those more likely to attach to unconventional peers is revealed. Hirschi (1969) posited that one's adoption of conventional norms and "stake in conformity" affects one's choice of the friends to whom he will attach (p. 159). Therefore, assessments of social bonding can illuminate the strength of attachment to peers as well as adherence to conventional beliefs. This information could be used to help identify those who may be more prone to attach to substance abusing friends due to weak belief bonding elements. Additionally, those with low levels of social interest, who do not feel a sense of belonging in the greater human community, may be less inclined to adopt conventional beliefs and be more likely to attach to unconventional peers who engage in drug and alcohol abuse. Social interest and social bonding contribute to the understanding of the effect of social norms and add important elements to the profile of collegiate students at-risk for hazardous drinking and marijuana use.

Religion and Spirituality

Another individual difference of collegiate substance abusers is involvement in religious or spiritual practices. Researchers have found the lack of importance of religion to be a predictor of marijuana use (Bell et al., 1997) while adherence to a religious belief system serves as a protective factor against alcohol abuse (Brown et al., 2007; Theall et al., 2009; Wechsler et al., 1995). Only 15% of college students who rated religious and spiritual beliefs as highly important were frequent users of marijuana while 41% of those with low importance ratings were frequent users (Stewart, 2001).

Social interest appears related to religious and spiritual adherence, as well, as one researcher found that religious and spiritual variables accounted for a significant portion of variance in undergraduate social interest levels (Leak, 2006). Specifically, characteristics such as spiritual universality, spiritual connectedness, and concern with that which transcends the self, were significantly associated with social interest (Leak, 2006). Adler himself used religious ideas to describe social interest. He asserted that the command to “love thy neighbor” will no longer be necessary as the human community evolves and grows in social interest, for such a response was come natural (Adler, 2006). Therefore, social interest may contribute to the adherence to religious and spiritual practices, which can protect against substance abusing behaviors.

Religiosity and spirituality also appear to be connected to social bonding. In his original study, Hirschi did not include religion as a variable of analysis. Since Hirschi's introduction of social bonding, however, many scholars have found support for religious elements in the curbing of delinquent behavior including religious attachment (Marcos et

al., 1986), religious commitment (Durkin et al., 2007) and involvement in religious organizations (Ryan et al., 2008). The impact of religion and spirituality as a bonding element to control delinquency, however, is not without contradictory findings. When studied in relation to violence, the adoption of religious beliefs was not found to be significant among adolescents (Cretacci, 2003). Cretacci's sample included middle and high school students who are in the early stages of faith development (Fowler, 2001), which may have influenced Cretacci's findings, as the process of identifying and adopting a personalized spiritual belief system had yet to emerge. In light of the moderate support for religion and spirituality in social bonding literature, coupled with the association between social interest and healthy spirituality, the examination of these two constructs with regard to collegiate substance abuse adds to the understanding of religious and spiritual influence.

Personality Characteristics

Individual differences of collegiate substance abusers also include an array of personality characteristics. For example, college student illicit drug use and alcohol consumption has been significantly positively correlated with sensation-seeking and risk taking traits (Ayvasik & Sumer, 2010; Cyders, Flory, Rainer, & Smith, 2009; Eisenman et al., 1980). Other researchers have found that those college students who later became heavy marijuana users had higher levels of ascendancy, or superiority, while those who remained nonusers had higher levels of responsibility (Gulas & King, 1976). Finally, in a study of 138 college students who consumed alcohol in the year prior, researchers found that those internally motivated to drink engaged in more alcohol use than those externally

motivated (Goldstein & Flett, 2009). Specifically, internally motivated drinkers had more negative affect and neuroticism than externally motivated drinkers and experienced more drinking consequences and episodes of binge drinking (Goldstein & Flett, 2009).

Considering the previously examined personality characteristics related to collegiate substance abuse, social interest provides another identifying trait of those students at-risk for hazardous drinking and marijuana use. Adler (1956) described social interest as an innate potential that must be consciously developed within the individual through relations with others. When this intrinsic capability is inadequately developed, the resulting behaviors include sexual deviance, substance abuse, criminal behavior, and mental illness (Adler, 1956). Thus, the investigation of social interest proves advantageous by identifying another personality characteristic to help recognize those who may be more susceptible to engage in substance abusing behaviors.

When examined in conjunction with social interest, social bonding is also relevant to the influence of various personality characteristics on collegiate substance abuse. Personality characteristics may influence the degree to which an individual seeks to bond with conventional society through the elements of attachment, commitment, involvement, and the adoption of conventional beliefs. The current study sought to examine the relationship between social interest and social bonding and explored the relationship between internal personality traits and the development of external social bonding.

Therefore, considering the relevance of social interest and social bonding with regard to gender, age of first drink, perceptions of social norms, religion and spirituality, and various personality characteristics, the examination of the two variables was a next

step in the advancement of the literature on collegiate substance abuse. Social interest and social bonding are pertinent to gender differences, influence the onset of alcohol consumption, have implications for the internalization of social norms, are related to the adoption of religious and spiritual practices, and constitute additional personality characteristics of interest with regard to college drug and alcohol abuse. As individual differences continue to enhance the explanation of collegiate substance abuse, additional components, such as social interest and social bonding, serve to improve the identification of at-risk students.

Social Interest

The construct of social interest serves as a valuable predictor in the study of collegiate substance abuse. Examined in conjunction with social bonding, social interest contributes to a better profile of students at risk for alcohol abuse and marijuana use. The concept, derived from Alfred Adler's Individual Psychology, refers to an innate potential toward cooperation, empathy, and identification with others (Adler, 1956). With regard to collegiate substance abuse, social interest is an important internal element used in the assessment of those at risk for hazardous drinking and marijuana use.

Adlerian Theory or Individual Psychology

Alfred Adler, the founder of Individual Psychology (also known as Adlerian Theory), was a contemporary, and associate of Sigmund Freud (Ansbacher & Ansbacher, 1956). Adler, however, diverged from Freud's assumptions pertaining to the human unconscious, which purport that individuals are driven by subconscious sexual and aggressive drives (Ansbacher & Ansbacher, 1956; Freud, 1962). Adler's ideas, in many

ways, developed into an antithesis of Freud's propositions (Ansbacher & Ansbacher, 1956). Adler proposed that the individual, rather than being driven by sexual and aggressive drives, was in fact striving to overcome inferiority and seeking to answer the three prominent questions or problems of life: friendship, work, and love (Adler, 1927). According to Individual Psychology, these three problems are inescapable and pertinent to all human beings. Adler also emphasized that these problems are social in nature and thus must be solved within a social context. Therefore, the individual and her or his social situation cannot be examined separately; rather, all problems in life are social in nature (Ansbacher & Ansbacher, 1956). The specific way in which an individual responds to these life problems is the criteria for categorization into Adler's four types of attitudes, another prominent feature of Individual Psychology (Adler, 1935). Those with a *ruling* attitude attempt to dominate others as a response to outside problems. Individuals with a *getting* attitude expect to consistently receive from others and those with an *avoiding* attitude attempt to side-step problems and thus evade the possibility of defeat. These first three types of attitudes are not socially useful, but rather lack cooperation and contribution to society. Adler's fourth type, however, is comprised of individuals with *useful* attitudes who find solutions to life problems in ways that benefit others. Those in this category are socially interested and assist in the evolution of humankind as they strive to advance society through their solutions (Adler, 1935). Therefore, within the framework of Individual Psychology, individuals strive to overcome inferiority and solve life problems within a social context rather than in isolation.

The pervasive association between the individual and social factors is an important component of Adler's theory and another distinction between Individual Psychology and the work of Freud. Adler and Freud diverged on the topic of the individual's attitude toward her or his fellow human beings. In light of the postulation that human behavior is driven by innate aggressive and sexual instincts, Freud deemed the religious command to "love thy neighbor" as ideal, yet, impossible for individuals to achieve (Freud, 1962). He believed the notion of loving one's neighbor contradicted the very nature of human beings who have innate tendencies toward aggression and destruction (Freud, 1962). Rather than dismissing the capacity to love one's neighbor, however, Adler proposed that in time, this command would no longer be necessary, but would become the natural human response (Adler, 2006). He asserted that eventually, loving one's neighbor would become an instinctual function of human interactions and an automatic response serving to better preserve and progress the species (Adler, 2006). In this way, Adler continued to define and explore his most critical contribution to psychological theory known as *Gemeinschaftsgefühl*, which was later translated to the phrase, *social interest* (Ansbacher & Ansbacher, 1956). This construct, encompassing one's ability to love his or her neighbor, is what Adler deemed the driving force of human progress (Adler, 1964). Adler posited that all problems in life could be solved by social interest and that, without social interest, no problem will ever cease to exist (Adler, 2006). Therefore the concept of social interest is an essential component of Individual Psychology.

Social Interest Characteristics

Considering the significance of social interest within his theory, Adler devoted much of his writing toward descriptions of the construct. Throughout his work, Adler described several definitions or facets of *Gemeinschaftsgefühl*, making the term very difficult to translate (Ansbacher, 1992). The concept includes empathy, cooperation, and concern for the interests of others, as well as feelings of connectedness with the universe (Adler, 1964). Thus the multifaceted nature of his construct proved to be challenging to translate into a phrase capturing all of Adler's sentiments. The term *social interest* was selected to encompass the essence of *Gemeinschaftsgefühl* and has been substituted for all other translations (i.e., social feeling, community interest, community feeling) for consistency (Ansbacher & Ansbacher, 1956). Social interest has thus been summarized to mean interest in the welfare of others and a sense of belonging in the human community (Ansbacher, 1992).

One of the primary characteristics of social interest is innateness. Adler (1964) described the construct as a potentiality that all human beings possess from birth, which must then be developed through experiences. Thus, social interest is characterized by development through social contexts. In order for an individual to experience social interest, it must be intentionally fostered by relational experiences with others. Within her or his social context, an individual has the opportunity to increase social interest beginning first by child interactions with parents or parental figures. Another characteristic of social interest is universality. Adler (1964) posited that "one finds a degree of social interest, although this is usually inadequate, in all men (sic)" (p.25).

Therefore, although varying in degree, social interest is theorized as a universal aptitude experienced by all persons.

Benefits of Developing Social Interest

The positive outcomes associated with the healthy development of social interest occur at both the individual and societal level. Adler (1956) asserted that those individuals with developed social interest will experience feelings of worth, optimism, courage, and a sense of acceptance within society. These persons feel “at home in life” and, in turn, adopt attitudes of usefulness (Adler, 1956; p. 155). Those with sufficient levels of social interest have the ability to cooperate, identify with others, empathize, and contribute to the development of society (Adler, 1956). They also are able to successfully solve life’s problems which demand the use of social interest (Adler, 1964). Therefore, the individual with developed social interest experiences many positive outcomes.

Beyond the individual, Adler posited that society also benefits from the development of social interest. In fact, Adler (1964) stated that humankind would advance and evolve as a function of the development of social interest. Rather than interest only in the welfare of others in one’s immediate circle, social interest refers to “feeling with the whole” and striving for the continued evolution of humankind toward an ideal community (Adler, 1964; p. 34). The cultivation of social interest, according to Individual Psychology, would lead to advances in the human community as problems in life are solved (Adler, 1964). Therefore, the construct of social interest, according to Adler, is necessary for the progress of society as well as the betterment of the individual.

Deficiencies in Social Interest

Despite the many benefits related to the development of social interest, Adler noted that not all individuals foster this aptitude. He described the obstacles that hinder the proper development of social interest including both overly pampering and neglecting a child (Adler, 1976). When a child learns through interactions with caregivers that it is useless to cooperate, he or she may attempt to solve the problems in life in ways that are not socially useful, thereby foregoing the development of social interest (Adler, 1976). As a result, when those lacking in social interest are exposed to problems in life that demand social interest (i.e., friendship, occupation, and love), they experience shock (Adler, 1935). Low social interest individuals often respond to this shock in ways that are detrimental to both themselves and society. Specifically, Adler (1956) stated that “all failures—neurotics, psychotics, criminals, drunkards, problem children, suicides, perverts, and prostitutes—are failures because they are lacking in social interest” (Adler, 1956; p. 156). Accordingly, Adlerians believe that deficiencies in social interest are associated with many individual and social negative outcomes.

Developing Social Interest

In light of the positive outcomes of sufficient social interest and detrimental outcomes of social interest deficiencies, the question as to how one develops social interest is important. In fact, one of the primary advantages related to the study of social interest is the theoretical premise that it can be developed. Adler identified the method through which to increase social interest in an individual as training in cooperation (Adler, 1976). This process entails joining with her or him in order to cultivate a

relationship with a trustworthy individual and subsequently increasing social interest and spreading it to others (Adler, 1927). Specifically, Adler (1976) stated that the treatment of low social interest individuals should include the identification of their non-useful attempts to solve life's problems and the substitution of more useful methods. In addition, those with deficiencies in social interest would benefit from the awareness of the importance of social interest and associated benefits (Adler, 1964). Thus, according to Individual Psychology, social interest can, in fact, be developed through interventions.

Adler believed that the educational and mental health systems were responsible for the development of social interest in those with deficiencies (Adler, 1927). Since that time, many researchers have posited specific intervention strategies to foster social interest in both school settings and clinical practice. For example, Clark (1995) proposed efforts to foster social interest in grade school students through the implementation of programs comprised of cooperative learning and community service. Nicoll (1996) emphasized that the goal of education is to develop social interest and described how Ansbacher's (1968) model of social interest development could be applied within the school system. The three stages described by Ansbacher (1968) include: 1) training in cooperation and social living, 2) developing the ability to cooperate, contribute, and empathize, and 3) cultivating an evaluative attitude to assess how choices influence others. Nicoll (1996) suggested that schools could serve develop social interest by integrating these three stages into the educational process. Further, Oberst (2009) suggested the primary aim of education from an Adlerian perspective is to present social interest as a responsibility in youth. By utilizing strategies of conflict resolution,

mediation, and peer mentoring, social interest can be cultivated through experience in the schools (Oberst, 2009).

In addition to developing social interest within the educational system, researchers have explored how to foster the trait within the mental health and therapeutic systems. For example, the promotion of victim empathy and social interest has been discussed with regard to the treatment of sexual offenders. Carich, Kassel, and Stone (2001) noted that social interest could be developed through activities such as writing victim letters, role playing offenses, and identifying the emotions of those connected to the victims. Further, McBrien (2004) presented the idea of forgiveness work as a means to expand and develop social interest in individuals as they cultivate compassion, understanding, and empathy for offenders. Finally, methods for developing social interest with the mentally ill, such as providing training and education related to increasing social skills and networking, increasing the social activity of clients, and integrating families into the clients' treatment programs, have been described in the literature (Maniacci, 1991). Therefore, the literature related to possible ways in which social interest could be developed in both educational and therapeutic systems adds to the utility of studying the construct.

Predictive Power of Social Interest

Additional support for the study of social interest is found in previous prediction studies. Throughout years of empirical study, researchers have found positive correlations between social interest and a variety of variables such as healthy spirituality (Leak, 2006), goal attainment (LaFountain, 1996), happiness and empathetic concern (Watkins

& Blazina, 1994), self actualization (Hjelle, 1975) and life satisfaction (Gilman, 2001). Further, social interest has been inversely correlated with negative constructs such as self-denigrating behaviors (Mozdzierz et al., 2007), hostility and depression (Crandall, 1975), anxiety and pathology (Fish & Mozdzierz, 1991), and maladjustment (Mozdzierz et al., 1986). In these instances, social interest has correlated with variables consistent with the propositions of Individual Psychology. Thus empirical evidence of the predictive power of social interest with regard to a variety of constructs supports the continued study of the construct.

Social interest and positive outcomes. Specifically, the relationship between social interest and positive outcomes has been the topic of much empirical study. Hjelle (1975) examined the relationship between social interest, self actualization, and locus of control among 75 undergraduate females and determined those in the higher social interest group were found to have high internal control scores ($F = 13.69, p < .001$) and high self actualization scores ($F = 10.97, p < .001$) when compared to the lower social interest group. These findings are consistent with Adler's (1956) assertions that social interest is related to feelings of personal value and usefulness and, thereby, self-sufficiency. Further, Gilman (2001) studied social interest with regard to life satisfaction levels among 321 high school students in high, medium, and low social interest groups. The researcher found that those in the high social interest group differed significantly from those in the low social interest group in terms of total life satisfaction ($F = 4.43, p < .01$), family satisfaction ($F = 4.50, p < .01$), and friend satisfaction ($F = 6.03, p < .01$). These results illuminate Adler's (1964) propositions that those with developed social

interest levels feel a sense of fellowship and belonging with the human community. Considering the theorized implications of sufficient social interest levels, empirical endeavors supporting the relationship between the construct and positive outcomes are not unexpected.

Social interest also has been determined to be a significant predictor of overall health status and energy level in an adult sample (Zarski, Bubenzer, & West, 1986) and job satisfaction (Amerikener, Elliot, & Swank, 1988). Additionally, Watkins and Blazina (1994) studied social interest among 207 college students and found a significant correlation between social interest and empathetic concern, happiness, and perspective taking. Therefore, researchers provide evidence for the notion that higher levels of social interest are related to a number of positive outcomes. These findings, which are consistent with Individual Psychology, serve to support the predictive utility of social interest.

Social interest and mental health. Adler (1956) included mental illness as a possible outcome of those who fail to develop social interest. Specifically, he identified those with anxiety, suicidal ideation, neurosis, and psychosis as lacking social interest and thus the ability to solve life's problems in socially useful ways (Adler, 1964). The subsequent empirical study of social interest with regard to mental health characteristics has offered support for this assertion. For example, Mozdierz et al. (2007) examined the relationship between social interest and pathology according to the Millon Clinical Multiaxial Inventory II and found that participants with lower social interest scores had more pathology. Similarly, when high social interest participants were compared to low

social interest participants from three mental health agencies, researchers determined that high scorers had less depression, insecurity, anxiety, and hostility than low scorers (Fish & Mozdierz, 1991). In both of the aforementioned studies, more pathological symptoms were associated with lower social interest scores, which is consistent with a central tenet of Individual Psychology. In the study of incarcerated male youths and male schizophrenic patients, researchers determined that both deviants and schizophrenic participants had lower social interest than control group participants, and schizophrenics scored significantly lower than the incarcerated participants (McCown, Johnson, Silverman, & Austin, 1988). Further, Newbauer and Stone (2010) also found support for the relationship between social interest and mental health in their study of 99 adolescents in a detention center. The researchers reported significant, inverse relationships between social interest scores and depression/anxiety ($r = -.51$) and anger/irritability ($r = -.58$) scores. The association between mental health and social interest has been well studied and provides support for Adler's propositions.

Social interest and criminality. Adler also proposed a relationship between social interest and criminal behavior. Specifically, Adler described criminals as those who are struggling to solve the problems in life without the use of social interest (Adler, 1976). The criminal is not interested in others and is thus unprepared to meet the demands of life (Adler, 1976). Since these assertions, many researchers have explored the relationship between social interest and crime. For example, Reimanis (1974) studied the early childhood memories of 103 convicted male adolescents as well as a control group of male high school and college students. The author found a significantly higher

proportion of childhood memories detailing events that interfered with the development of social interest in the convicted youth than in the comparison group. In addition, Miranda and Fiorello (2002) explored the relationship between social interest and 189 male pedophiles. Their findings indicated a significant negative correlation between social interest scores and the number of committed offenses ($r = -.43, p < .01$) as well as the duration of the pedophilic relationship ($r = -.36, p < .05$). Similarly, Daugherty, Murphy and Paugh (2001) found a negative, significant relationship between social interest level and felony arrests ($r = -.23, p < .05$) among a sample of 91 male offenders on parole. Further, the researchers found that participants with lower social interest scores were more likely to be reincarcerated (Daugherty et al., 2001). These empirical studies provide support for Adler's assertions that social interest and criminality were related.

Challenges with the Study of Social Interest

Although the utility of researching social interest is apparent, the construct poses several obstacles for researchers. One primary challenge is the operational definition of Adler's original concept. Often, the complexities of social interest are difficult to capture in a uniform definition used in all empirical works. This particular challenge may contribute to the mixed findings related to social interest studies in the literature.

Operational definition difficulties. In light of its centrality to his theory, researchers have devoted much time and intentionality to the task of operationally defining the construct of social interest. Several authors have struggled to define the entirety of the construct. Bickhard and Ford (1976) illuminated this challenge in their analysis of failed attempts to integrate the nature of social interest with the function of

social interest. In response to their critique, Crandall (1978) provided an alternative understanding of social interest, based on Adler's writings, which served to elucidate the core components of the construct. Despite continued attempts to extract the fundamental definition of social interest from Adler's theory, however, difficulty remains in the process of operationally defining the term. The challenge stems from the original depictions of social interest in which Adler used two distinct words to describe his construct (Ansbacher, 1992). He used the phrase *social interest* to refer to the active striving toward one's neighbor, or interest in the interests of others (Ansbacher, 1968), and the phrase *community feeling* to describe a sense of solidarity or connectedness of human beings (Ansbacher, 1992). Therefore, two distinct meanings of Adler's construct existed from its conception, both social interest and community feeling. Because of the imprecise and metaphysical nature of community feeling, however, the dimension referred to as social interest received the most empirical attention (Ansbacher, 1992). Eventually, for the sake of consistency and simplicity, Adler's construct was translated only to social interest, the phrase that replaced all alternate translations (Ansbacher & Ansbacher, 1956). Although consistency might have been gained through the use of only one translated phrase, social interest now has a variety of distinct features and characteristics making it difficult for researchers to operationally define. For example, Guzick, Dorman, Groff, Altermatt, and Forsyth (2004) sought to empirically examine social interest. Through factor analysis, they found two independent factors of the construct, which they referred to as social liking and social empathy. The researchers discovered that the variables of community connectedness, teacher relationships, family

relationships, and peer relationships were related to social liking, while only teacher relationships and community connectedness were associated with the social empathy. These findings support the existence of multiple facets within the concept of social interest (Guzick et al., 2004). Thus, the multifaceted nature of the construct poses challenges for researchers as they seek to operationally define the term.

Mixed findings in social interest research. The difficulty in operationally defining social interest may be a contributing factor to the low to moderate correlations found in much of the social interest research. In Adler's writings, social interest was paramount and has been described as the cardinal characteristic of this theory (Ansbacher, 1968). Specifically, Adler (1935) noted that the primary tasks of life demand social interest in order to be solved and the cure for all failures is the increase of social interest. Despite the centrality of the construct in Adler's theory, the correlations between social interest and theoretically corresponding variables are, at times, low to moderate. These low correlations suggest a disconnection between theory and research, which may be a manifestation of flaws in the operational definition of social interest. For instance, in his study regarding social interest and satisfaction, Gilman (2001) found a significant but low correlation between social interest level and total life satisfaction ($r = .16$). Similarly, Newbauer and Stone (2010) found significant negative relationships between social interest and time spent in a secure detention center and number of charges/violations, but these correlations were low to moderate ($r = -.23$ and $r = -.28$, respectively). Additionally, Zarski et al. (1986) found social interest to have significant relationships with health status, somatic symptoms, and energy level, yet all correlations were also low

($r = .26$, $r = -.18$, and $r = .13$ respectively). Therefore, the construct of social interest consistently correlates with variables supported by theory and in the appropriate direction, yet the correlations often are relatively modest. One possible explanation for these findings is a limited operational definition that fails to encompass the entirety of Adler's original construct.

Measuring Social Interest

In light of the challenges in the study of social interest, it is essential that researchers develop valid and reliable estimates of the construct. Several researchers have attempted to create an accurate measure capturing the fullness of social interest. Since the 1970s, four primary instruments have been used to study the construct; the Social Interest Index (SII; Greever, Tseng, & Friedland, 1973), the Social Interest Scale (SIS; Crandall, 1975), Sulliman Scale of Social Interest (SSSI; Sulliman, 1973), and the Belonging/Social Interest Scale of the BASIS-A (Basic Adlerian Scales for Interpersonal Success-Adult Form) (Wheeler, Kern, & Curlette, 1993). Although these measures have demonstrated utility in researching social interest, there are accompanying limitations to consider as well.

Problems with self report assessments. In light of the numerous instruments available to measure social interest, many researchers have sought to examine these instruments (Bass et al., 2002; Bubenzer, Zarski, & Walter, 1991; Leak, 1982; Mozdierz et al., 1986; Peterson, Epperson, & Hutzell, 1985). Consistently, however, researchers have found low correlations between the measures. For example, in their meta-analysis of 124 studies using social interest instruments, Bass et al. (2002), discovered low

correlations between the different measures (ranging from $r = .08$ to $r = .29$). Thus, it is presumed that each instrument assesses a different facet of the complex concept of social interest (Bass et al., 2002).

Other researchers also have found conflicting results when using multiple social interest measures in their studies. For example, Bubenzer et al. (1991) sought to determine the validity of the SIS, SII, and the Early Recollections Questionnaire (ERQ) created by Altman (1973). The authors found low intercorrelations between the measures (ranging from $r = -.12$ to $r = -.29$) and no significant correlations between the SIS or ERQ and personality attributes theorized to be associated with social interest (i.e., self-acceptance, responsibility, communality). In addition to low correlations between measures, researchers have found other challenges in the measurement of social interest. In a study of the social desirability of two social interest measures, Leak (1982) determined a significant correlation with the SII and social desirability. He did not find a significant relationship between the SIS and social desirability. This study raises caution as to the susceptibility of eliciting socially desirable answers on social interest measures. Another study illuminating the challenges of social interest measures was conducted by Peterson et al. (1985) in an effort to compare the SIS and SII. Using a sample of 36 female inmates and control group of 36 female university employees, the authors found that neither social interest instrument could differentiate the inmates from employees. These researchers thus posited that the two instruments may be measuring different aspects of Adler's multidimensional construct (Peterson et al., 1985). Inasmuch as these

problems have been identified, some researchers have sought to assess social interest through alternative means.

Observational measures. In an effort to measure social interest without using self-report instruments, researchers have investigated the utility of observational measures. For example, McCown et al. (1988) utilized facial expression slides to determine if social interest levels could be assessed by monitoring one's ability to perceive nonverbal communication through facial expressions. The researchers posited that the ability to decode facial expression slides is evidence of social interest. They found significant differences between groups of incarcerated male youths, male youth with schizophrenia, and a control group of male students, in mean scores of correctly decoded slides (24.90, 36.20, and 43.33, respectively). These findings support the hypothesis that differences in social interest exist in groups of incarcerated youth, youth with schizophrenia, and a control group, and that these differences could be measured with facial expression recognition activities. Another attempt to utilize observational methods as a way to measure social interest is described in the work of Huber and Coleman (1986). These researchers attempted to assess social interest levels by utilizing double-aspect stimuli comprised of both human and nonhuman components. Using a sample of blood donors and non-donors, the authors projected images on a screen depicting human and nonhuman components. They found that those with higher levels of social interest (blood donors) attended more to human elements than nonhuman elements in the stimuli (Huber & Coleman, 1986). This study provided support for the examination of social interest through observable methods. Although the previous studies offer

alternatives to self-report social interest measures, the authors asserted that observable measures assess only a part social interest and thus findings should be interpreted with caution (McCown et al., 1988). Therefore, both self-report and observable methods of measuring social interest pose challenges to researches. The many empirical findings of social interest studies that are consistent with the premises of Individual Psychology provide support, however, for the notion that current measures are assessing, at least in part, components of Adler's construct. A potential way to resolve this issue may be to couple a current empirical measure of social interest with another relevant construct (such as social bonding) that is relatively related to the unaccounted for features of Adler's original concept.

Association between Social Interest and Substance Abuse

Despite the aforementioned challenges in the study of social interest, there is substantial theoretical and empirical support for the study of the construct with regard to substance abuse. Both Adler's original assertions and subsequent research endeavors confirm an inverse relationship between one's level of social interest and drug and alcohol abusing behaviors. The support for this relationship in existing literature and theory contributes to the need for further study related to social interest and college student hazardous drinking and marijuana use.

Theoretical Support

The association between social interest and substance abuse was explicitly stated in Adler's proposition that "drunkards" fail in the area of social interest (Adler, 1956; p. 156). Adler (1956) further describes those with drug and alcohol addiction as individuals

with underdeveloped levels of social interest who are faced with problems in life that thus appear unsolvable. When confronted with the tasks of friendship, work, and love, some persons devoid of developed social interest turn to drugs or alcohol in order to escape these challenges that they are not prepared to face. Dreikurs (1990) contributed to the elaboration of this relationship when he highlighted how low levels of social interest correlate with a lack of feeling as if one belongs with others and within team play. Thus, a primary motivation for substance abuse is to avoid life tasks, which require cooperation and contribution (Dreikurs, 1990). Substance abusing behaviors, therefore, are theorized to originate from deficiencies in social interest.

Empirical Support

A variety of subsequent research efforts have provided empirical support for Adler's theoretical propositions linking social interest and substance abuse. Chaplin and Orlofsky (1991) examined the early recollections of men with a history of alcohol abuse and a control group. The researchers determined a significant difference between the groups on the variable of social interest as those with alcohol abuse histories had lower social interest manifested in their early recollections. Colker and Slaymaker (1984) also studied early recollections of those with a history of drug abuse and a control group, and found support for differences in social interest between the two groups.

Along with these findings related to adult populations, several researchers have examined the relationship between social interest and substance abuse specifically within collegiate samples (Keene & Wheeler, 1994; Lewis & Wachter, 2006; Lewis & Watts, 2004), yet these results have been mixed. In their study of 273 college students, Lewis

and Watts (2004) determined that social interest, as measured by the Belonging/Social Interest Scale of the BASIS-A, was a significant predictor of quantity and consequences of alcohol consumption. Other researchers, however, have found that social interest does not significantly relate to collegiate substance abuse (Keene & Wheeler, 1994; Lewis & Wachter, 2006). Possible explanations for these mixed findings pertain to discrepancies in what the social interest instruments may actually be measuring, as well as variability across substances and levels of consumption. These mixed findings suggest that more research is warranted to better understand the relationship between social interest and collegiate substance abuse.

Due to the theoretical foundation for the relationship between social interest and substance abuse, coupled with some empirical support, more examination is needed in this area. The study of social interest levels, hazardous drinking, and marijuana use among college students serves to considerably contribute to this body of literature as the relationship is investigated further. Additionally, the coupling of a social interest measure with another empirically supported construct provides a fuller assessment of Adler's original concept and complements the explanatory power of social interest. Travis Hirschi's (1969) construct of social bonding effectively serves this purpose.

Social Bonding

In addition to social interest, the construct of social bonding is also a powerful predictor of hazardous drinking and marijuana use among college students. Originating from the control theorist perspective, social bonding refers to those external elements that curb delinquent behavior (Hirschi, 1969). Although the construct originally developed

from the study of juvenile delinquency, it has been subsequently applied to collegiate and adult populations (Cretacci, 2003; Durkin et al., 2007, 2009; Fukushima et al., 2009) supporting its utility in the study of collegiate substance abuse.

Social Bonding Definitions

Sociologists have developed many theories to explain criminal or delinquent behavior. The majority of these theories seek to reveal why some individuals engage in criminal acts. Control theorists, however, seek to answer a different question pertaining to what keeps an individual from committing crime (Akers & Sellers, 2009). Specifically, control theory explores why individuals would conform to the rules of society (Hirschi, 1969). Social bonding continues to be regarded as the most studied construct stemming from control theory in sociological literature (Akers & Sellers, 2009).

Social bonding emerged from the work of Travis Hirschi (1969) who sought to explore those elements that prevent juveniles from engaging in delinquent behavior. In his original study, Hirschi examined four elements of the social bond in a sample of adolescent males from the school system of Western Contra Costa County in California. To conduct his study, Hirschi utilized school records, his social bonding questionnaire, and police data to assess for bonding elements and delinquency. Hirschi defined delinquency as, “acts, the detection of which is thought to result in punishment of the person committing them by agents of the larger society” (Hirschi, 1969, p. 47). This broad definition is relevant to a variety of behaviors, making social bonding applicable to variables beyond juvenile delinquency, such as collegiate substance abuse.

To study what prevents the individual from engaging in delinquent behavior, Hirschi examined elements of one's bond to society. All four bonding elements are external in nature as Hirschi believed internal elements, such as internal control, conscience, and internalized norms, were too subjective for empirical study (Akers & Sellers, 2009; Hirschi, 1969). Therefore the construct of social bonding serves to assess and evaluate the relationship between external components and acts that would result in punishment if discovered. Specifically, the social bond contains the elements of attachment, involvement, commitment, and belief (Hirschi, 1969).

Attachment. According to Hirschi (1969), the element of attachment refers to close affectional ties with others. He investigated attachment to parents, school, and peers contending that those with stronger attachments would be less likely to engage in delinquent acts and more likely to uphold the standards of conventional society. Hirschi's study confirmed the importance of attachment to parents as those participants who perceived their parents to be unaware of their behaviors, had less intimate conversation with their parents, and identified less with their parents, were more likely to commit delinquent acts. With regard to school, Hirschi hypothesized that those students who performed well in school would find it more enjoyable and thus be more attached. His data confirmed that those adolescents who performed better in school, thought of themselves as competent in school, and cared about how they were perceived by their teachers, were less likely to commit delinquent acts. Further, Hirschi uncovered a strong correlation between liking school and delinquency, supporting the notion that those more attached to school were less likely to engage in delinquent acts. Finally, Hirschi

examined the relationship between attachment to peers and delinquency and determined that the more adolescents admired and respected their friends, the less likely they were to engage in delinquency. The issue of attachment to delinquent peers warrants further consideration, however, as Hirschi originally hypothesized that attachment to any peer, delinquent or not, would curb delinquency. In his study, Hirschi found that those who engaged in delinquent acts were very likely to have friends who also engaged in delinquent acts. Yet, rather than providing support for differential association theory, which posits that delinquent or criminal behavior is learned from interactions of those already engaging in the behavior (Akers & Sellers, 2009), control theorists purport that as an individual loses his “stake in conformity” or investment in conventionality, he is drawn to the company of delinquent peers (Hirschi, 1969; p. 138). Thus, Hirschi interpreted his findings to mean that those participants with lower stakes in conformity were more likely to have delinquent friends and commit delinquent acts. Therefore, attachment to parents, school, and peers were significantly related to delinquency in Hirschi’s original study.

Since his original study, additional support for the attachment bond has been found in studies of delinquency. For example, Marcos, Bahr, and Johnson (1986) studied the relationship between social bonding and drug use among 2,626 high school students and found that parental attachment was significantly, negatively correlated with life time combined drug use ($r = -.30, p < .001$). Additionally, Ryan et al. (2008) studied 278 African American male juveniles in foster care and found a significant inverse

relationship between strength of relationships with foster parents and delinquent behavior.

Along with attachment to parents/guardians, attachment to school has also been supported in the literature. Cretacci (2003) determined that one's degree of attachment to school was a significant predictor of violent behavior across age groups. Using data from the National Longitudinal Study of Adolescent Health, Cretacci (2003) determined a significant inverse effect of school attachment on violence for both middle (14-16 years) and late (17-19 years) adolescents. Additionally, attachment to school was found to have a particularly strong negative correlation to exposure to pornography (Mesch, 2009) and smoking (Massey & Krohn, 1986), while attachment to teachers played an important role in negatively impacting truancy (Veenstra et al., 2010).

Due to inconsistent findings related to attachment to peers and low reliability scores of instruments that include attachment to peer scales, attachment to parents was the only scale representing the attachment element of the social bond in the present study. The commitment element addressed bonding with higher education in order to capture this important relationship. This method of obtaining data is consistent with other research endeavors examining social bonding and collegiate substance abuse (Durkin et al., 1999).

Commitment. The social bonding element of commitment refers to the pursuit of conventional goals, specifically through investing in education and employment (Hirschi, 1969). Hirschi determined that those participants who were more committed to conventionality were less likely to engage in delinquency than those less committed. In

fact, those participants more involved in “adult activities” such as smoking, drinking, or dating, and thereby foregoing commitment to the customary sequence of events between adolescence and adulthood, were found to be more involved in delinquent behavior.

Along with commitment to conventional actions, commitment to school and education was found to be significant. Hirschi discovered that the more committed students were to education as expressed through their academic aspirations, the less likely they were to engage in delinquency. Additionally, support was found for commitment to employment as those with higher occupational aspirations were found to be less delinquent.

Therefore, the element of commitment was supported in Hirschi’s original study as it was found to be inversely associated with delinquency.

Additional support for the commitment element of the social bond exists in the literature, specifically in the study of collegiate substance abusing behaviors. Durkin et al. (2007) examined 1,459 college students with regard to social bonding and drunk driving. The researchers found that the commitment element of the social bond, represented by GPA scores, religious commitment, and commitment to higher education, negatively correlated with drunk driving (Durkin et al., 2007). Sun and Longazel (2008) also determined that GPA, which represented the commitment element of the social bond, inversely related to negative behaviors resulting from alcohol consumption in a sample of 558 college students. The negative correlation between GPA and binge drinking has also been supported in the literature (Durkin et al., 1999). The present study assessed commitment in a similar fashion to previous research endeavors by examining commitment to higher education as well as religious commitment.

Involvement. The element of involvement simply refers to the amount of time devoted to conventional activities, which thereby decreases the opportunity to engage in delinquent behavior (Hirschi, 1969). This element has proven to be difficult to assess, however, due to the connectedness of the element with other facets of the social bond. In his original study, Hirschi found that adolescent involvement in dating and work significantly related to delinquency in the opposite direction predicted by control theory. He hypothesized that those more involved in dating and work were less attached to school and therefore more susceptible to delinquency. On the contrary, those participants who spent more time in school-related activities, such as homework and extracurricular activities, were less likely to commit delinquent acts. Therefore, the type of activity in which the participant is involved impacts the effectiveness of the bonding element. Later, Wong (2005) validated Hirschi's interpretation of his contradictory finding by providing empirical evidence supporting the relationship between the involvement and attachment elements of the social bond. In his study, Wong found that involvement in conventional activities, in which conventional (non-delinquent) associations were made, strengthened the social bond and controlled for delinquent behavior. Involvement in activities which led to unconventional associations did not control, however, for delinquency (Wong, 2005).

This finding is particularly important with regard to the study of social bonding among college students. Although athletic and Greek organizations are school-related activities, research has found that students involved in these groups are more likely to abuse substances than those who are not involved (Barry, 2007; Bell et al., 1997; Caron,

Moskey, & Hovey, 2004; Theall et al., 2009; Wechsler et al., 1995; Wechsler et al., 1997). Therefore, as in Hirschi's original study, if the activity does not support the standards of conventionality, involvement may serve to increase delinquent acts rather than control for the behavior. Supporting this consideration, Sun and Longazel (2008) found college students who regularly attended events or activities hosted by the university were less likely to engage in drinking and driving, while those students who were involved in university athletics were more likely to engage in binge drinking. Durkin et al. (1999) found that the involvement element, measured by hours spent studying, hours spent at a place of employment, and hours involved in extracurricular activities, had a significant negative correlation with collegiate binge drinking ($r = -.21, p < .01$). The present study utilized the same involvement index in relation to hazardous drinking and marijuana use.

Belief. The final bonding element, belief, consists of endorsing conventional norms and values (Akers & Sellers, 2009). Specifically, the element refers to perceptions of the law, police, and rules of society (Hirschi, 1969). Hirschi contended that delinquency results from the absence of beliefs that forbid engaging in delinquent acts. In support of his hypothesis, Hirschi found that those participants who did not believe that the law should be obeyed were more likely to engage in delinquent acts. Further, items indicating respect for the law were found to be strongly, negatively correlated with delinquency in his original study. Thus, the utility of Hirschi's final element, belief, in controlling for delinquency was also supported in his empirical investigation.

The belief component of the social bond continues to be an important factor in the literature, particularly in studies related to collegiate substance abuse. For example, Seredycz and Meyer (2005) examined the relationship between illicit drug use and social bonding in a sample of 699 university students. The researchers utilized a behavioral, rather than attitudinal, measure of the belief element consisting of self-reported misdemeanors or felonies that were assumed to represent acceptance of authority and social conventionality. Belief was found to be a statistically significant predictor of illicit drug use (Seredycz & Meyer, 2005). Additionally, Durkin et al. (2009) determined the belief element of the social bond was the most important predictor within the category of protective factors in the study of social bonding and alcohol related problems among undergraduates. Finally, the belief element has negatively correlated with the act of drunk driving among college students as those with low levels of acceptance of conventional beliefs were found to be twice as likely to drive drunk as those with high levels of acceptance (Durkin et al., 2007). The present study utilized the scale assessing the belief element employed by Durkin et al. (1999) which included two variables: respect for authority and acceptance of conventional beliefs.

Limitations of Hirschi's original study. Although largely supportive of his initial claims, Hirschi's study of social bonding diverged from his hypotheses on two accounts: attachment to delinquent peers and involvement in conventional activities (Hirschi, 1969). Hirschi failed to account for the importance of attachment to delinquent friends on acts of delinquency and did not differentiate between the delinquent or non-delinquent nature of the peers to whom an individual attaches. Initially, Hirschi believed

that attachment to any peer, conventional or not, would serve to control for delinquent behavior. He found that those attached to delinquent friends were more likely, however, to engage in delinquency themselves. Hirschi explained this discrepancy by asserting that attachment to delinquent others was the result of low stakes in conformity, which then led to socialization with delinquent peers. These low stakes in conformity, rather than social learning, were the source of one's propensity to engage in delinquent acts.

With regard to the contradictory findings related to involvement, Hirschi discovered that participation in some activities, such as dating and employment, were in fact related to increased levels of delinquent behavior. Hirschi explained this finding by purporting that only activities in line with the conventional standards of society would decrease the likelihood of delinquent acts. Involvement, he determined, was related to the element of attachment and those involved in unconventional activities may develop attachments with unconventional peers.

A final limitation of Hirschi's study relates to the sample, which consisted only of male participants. Although males are consistently found to engage in more delinquent acts than females (Gilmore, Rodriguez, & Webb, 2005; Mesch, 2009; Ozbay & Ozcan, 2008; Schreck & Fisher, 2004; Veenstra et al., 2010), the lack of information in the original study related to female adolescents is a significant limitation. Since Hirschi's original research, however, other researchers have examined social bonding with relation to both male and female participants and found support for its utility (Booth, Farrell, & Varano, 2008; De Li & Mackenzie, 2003; Dukes & Stein, 2001; Durkin et al., 1999; Ford, 2009; Heimer, 1996; Huebner & Betts, 2002; Ozbay & Ozcan, 2008).

Predictive Power of Social Bonding

Many researchers since Hirschi have found empirical results supporting the importance of bonding elements in the control of delinquent behavior (Durkin et al., 1999; Krohn et al., 1983; Mesch, 2009; Ozbay, 2008; Ryan et al., 2008). For example, Wiatrowski, Griswold, and Roberts (1981) surveyed a sample of 2,213 tenth grade boys comparing each bonding element with self-reported delinquent behavior. All four elements of the bond were found to be negatively related to delinquency scores. Further, Ozbay and Ozcan (2006) administered a social bonding questionnaire to 1,710 high school students in Ankara, Turkey, discovering that all four social bonding elements had a significant inverse relationship with delinquent behaviors. Finally, Mesch (2009) reported the results of a survey assessing 998 adolescents' consumption of internet pornography as well as the elements of the social bond. He discovered a significant inverse relationship between both commitment to family and belief related to pro-social attitudes, and exposure to pornographic material. Attachment to school and teachers, as well as commitment to religious organizations, also had a negative relationship with pornographic consumption (Mesch, 2009). Therefore, Hirschi's construct of social bonding continues to demonstrate influence in studies of delinquent behavior.

Predictive power of individual bonding elements. An important consideration in the study of social bonding is the differing strengths of individual bonding elements with regard to delinquent acts. Although all bonding elements have been supported in previous research, evidence exists that some elements have stronger correlations than others, depending on the delinquent variable under examination. For example, Krohn et

al. (1983) explored the association between the four elements of the bond and adolescent cigarette smoking. These researchers conducted a longitudinal analysis of 1,405 middle and high school students across one year and found that all bonding elements were moderately successful in explaining adolescent smoking, yet belief and commitment had the strongest impact on constraining the behavior (Krohn et al., 1983). Similarly, Akers and Lee (1999) conducted a survey of students in grades 7 through 12 assessing the bonding elements of attachment, commitment, and belief with regard to marijuana use. The researchers found significant inverse relationships between all three bonding variables and the use of marijuana, yet they determined that commitment and belief had the strongest impact on the behavior (Akers & Lee, 1999). In addition, researchers studying collegiate substance abuse found the bonding elements of involvement and belief to be the most strongly correlated to cannabis, stimulant, or other illegal drug use among undergraduate, master's, and doctoral students (Seredycz & Meyer, 2005). Therefore, it is important to consider the predictive power of the construct of social bonding, as well as the unique contribution of each individual element on the behavior in question.

Gender issues and predictive power. Gender issues also have been considered in social bonding literature in light of the gender differences related to delinquency. Researchers have found that bonding elements may have unique effects on male and female participants (De Li & MacKenzie, 2003; Huebner & Betts, 2002; Ozbay & Ozcan, 2008). For example, Huebner and Betts (2002) investigated the relationship between social bonding variables and delinquent behavior among 911 middle and high school

students. The researchers explored the relationship between the elements of attachment and involvement with regard to delinquent behavior in males and females. Attachment measures assessed one's attachment to parents, adults, and peers, while involvement measures evaluated one's time spent in conventional activities such as school, clubs, and household chores. Results indicated that attachment accounted for more variance of delinquency in females, while involvement accounted for more variance of delinquency in males (Huebner & Betts, 2002).

In addition to the impact of individual elements on participants of each gender, researchers also have found differences in the utility of bonding elements for members of one gender compared to members of the other. For example, Ozbay and Ozcan (2008) tested the predictive power of social bonding theory on male and female delinquency. They found support for the fact that social bonding elements play a more important role in the explanation of male delinquency than female delinquency. Social bonding theory accounted for more variance in assault, school delinquency, and public disturbance in males when compared to their female counterparts (Ozbay & Ozcan, 2008).

Other considerations exist related to gender and social bonding beyond the exploration of gendered differences in the predictive power of individual elements. Some authors have suggested that Hirschi's construct of the social bond may in fact perpetuate hypermasculine beliefs and behaviors that could include woman abuse (Godenzi, Schwarts, & Dekeseredy, 2001). In the event that an individual, such as a college male, is attached, involved, committed, and adheres to the beliefs of conventional society, abuse toward women may occur if that conventional society endorses patriarchal values and

ignores gendered power (Godenzi et al., 2001). Alternatively to this view, Williams and Hawkins (1989) studied the utility of the social bond in controlling male aggression toward their female partners and determined that bonding elements were negatively correlated with physical aggression. Particularly, those men with stronger attachment and belief elements were less likely to engage in the physical assault of their female romantic partner (Williams & Hawkins, 1989). Thus, although it has been hypothesized that bonding with conventional society could lead to abuse of a female partner, empirical evidence supports the exact opposite, that bonding elements control violence against women (Lackey & Williams, 1995; Williams & Hawkins, 1989).

The social bond, therefore, must be considered within the context of gender. Researchers continue to elucidate differences between male and female participants with regard to involvement in delinquency as well as impact of social bonding elements. The determination of the predictive power of social bonding includes the examination of individual contributions of bonding elements as well as unique effects on participants of both genders.

Mixed Findings in Social Bonding Research

Although generally supported in the literature, some researchers have found contradictory results or low correlations between social bonding and delinquency. For example, Rankin (1976) explored the relationship between social bonding elements and delinquency in a sample of 385 adolescents. He determined that social bonding was supported only when the adolescent had no delinquent friends. Thus, the number of delinquent companions had a stronger impact on delinquency than any of the bonding

elements (Rankin, 1976). Although Hirschi purports that those with delinquent friends already possessed low stakes in conformity, and therefore sought companionship with peers engaging in delinquent acts, the lack of predictive power of the other bonding elements in light of this attachment is contradictory to this hypothesis. Another contradictory finding pertains to social bonding elements and drug use. Ford (2005) used data from the National Youth Survey and examined the relationship between family and school bonding elements and adolescent drug use. He found that only the family bond was a significant predictor of marijuana use and delinquency when compared to commitment to school, attachment to school, and school honesty. The interesting finding of Ford's study relates to the direction of the relationship between bonding elements and drug use. His findings support the notion that illicit drug use and delinquency are significant predictors of family and school bonding; as drug use increases, these bonds decrease (Ford, 2005). Thus, rather than social bonding elements controlling for delinquent behavior, some support has been found for the notion that involvement in delinquency will subsequently weaken social bonds. Finally, Durkin, Blackston, et al. (2009) offered another challenging finding related to social bonding research. In the study of 1,459 undergraduate students, the researchers assessed the relationship between alcohol related problems and both risk and protective factors. The risk factors included differential peer associations, peer norm qualities, and rewards for use, while protective factors included social bonding elements such as religious commitment, commitment to higher education, and respect for authority. The results supported the utility of a model derived from risk factors (40% of the variance) beyond a model derived from protective

factors (20% of the variance) in the explanation of alcohol-related problems (Durkin et al., 2009). One possible explanation for the mixed findings related to social bonding theory is the challenges associated with operationally defining delinquency.

Hirschi (1969) used a very broad definition of delinquency in his original study, including any act that would bring punishment if discovered. Although the usefulness of such a wide-ranging definition is apparent, as the construct can be applied to a multitude of behaviors and populations, the disadvantage is the lack of uniformity and thus opportunity for conflicting results. Many researchers have defined delinquent behavior by way of delinquency indices comprised of a variety of status offenses and punishable acts (Agnew, 1985; De Li, 2004; Edwards, 1996; Fukushima et al., 2009; Longshore, Chang, & Messina, 2005; Ozbay, 2008; Wiatrowski et al., 1981). These indices have varying numbers of items and categorize delinquent acts and offenses in ways that lack uniformity across studies. Throughout social bonding literature, the dependent variable of delinquency can be defined by minor offenses such as truancy (Veenstra et al., 2010) and exchanging homework answers (Vowell & Chen, 2004) or more serious offenses, such as drunk driving (Durkin et al., 2007) or weapons possession (Dukes & Stein, 2001). Specifically, whether or not the delinquent behavior under examination includes acts of violence appears to contribute to the mixed findings in social bonding research. Some researchers have explored social bonding in relation to non-violent delinquent offenses such as binge drinking (Durkin et al., 1999), exposure to pornographic material (Mesch, 2009) or academic misconduct (Vowell & Chen, 2004), while other scholars have included violent delinquent acts in their empirical investigations such as self-reported

violence (Cretacci, 2003), assault (Ozbay & Ozcan, 2008), and self-reported crime including physical assault (Edwards, 1996). These studies have produced mixed results related to the relationship between social bonding elements and delinquency. For example, Cretacci (2003) used data from a National Longitudinal Study of Adolescent Health which sampled 6,500 students in order to examine the relationship between social bonding and violence. The social bonding elements had weak explanatory power for violence across developmental stages (Cretacci, 2003). To the contrary, Ozbay and Ozcan (2008) determined that social bonding elements explained 23% of the variance of female assault and 30% of the variance of male assault, both statistically significant contributions. Finally, Edwards (1996) studied a group of adolescents being detained by authorities and a comparison group of adolescents from public schools. He assessed the correlations between anomie variables, social bonding variables, and differential association variables among the adolescent participants. Although significant, social bonding variables had the weakest correlation to delinquent behaviors (including assault and physical violence) when compared to anomie variables and differential association variables. These studies indicate that the inclusion of violence in the dependent variable of delinquency may impact the strength of the findings. Therefore, the large variations in defining delinquency, such as whether or not violent behavior is included, may pose challenges to researchers and contribute to mixed or contradictory results. Although social bonding is predictive of a variety of delinquent acts with various populations, the challenges associated with research in this area warrants attention. Continued study of

social bonding is necessary to provide clarity as to the relationship of the construct and delinquent acts. To do so, requires considerations related to measurement strategies.

Measuring Social Bonding

Along with the construction of the social bonding concept, Hirschi also advanced the field through the formation of an empirical measure to assess bonding elements. His original measure consisted of 3 parts, each containing 160 items to measure attachment, commitment, involvement, and belief elements. In subsequent studies, researchers have used adaptations of Hirschi's original questionnaire to test social bonding with various forms of deviant behavior (Durkin et al., 2007; Krohn et al., 1983; Lackey & Williams, 1995; Vowell & Chen, 2004; Wong, 2005). These adaptations are much shorter than Hirschi's original 480 items and often combine the closely related commitment and involvement scales.

The practice of adapting the original measure, however, warrants additional consideration related to psychometric data in social bonding research. Although many researchers conduct effective data analyses, the lack of detailed psychometric data related to adapted versions of Hirschi's original questionnaire is problematic. The most common (and frequently solitary) psychometric data provided for these adaptations are Cronbach's alpha measures, used to assess the amount of homogeneity among the items of the questionnaire. These alpha scores vary and are, at times, lower than the widely accepted .70 alpha level of internal consistency for social science research (Heppner & Heppner, 2004). For example, Krohn et al. (1983) used a variation of the questionnaire and reported the following Cronbach's alpha levels: attachment scales (.64 and .88), belief

scales (.84 and .85), and commitment/involvement (.62). That is, two scales in this instrument (attachment and commitment/involvement) had Cronbach's alpha levels below the suggested .70. Further, Wiatrowski et al. (1981) also used an adapted version of Hirschi's questionnaire and determined the following Cronbach's alpha levels: attachment (.54), commitment (.59), involvement (.77), and belief (.87). Therefore, although the adaptations of Hirschi's original measure are widely used in social bonding research and offer a shorter, more time efficient way to gather data, additional psychometric data may be necessary to support the reliability of the adapted surveys. In the present study, Durkin et al.'s (1999) adapted questionnaire was used, as this measure has the strongest psychometric data supporting its reliability. The researchers reported Cronbach's alpha levels of .87 for the parental attachment variable, .80 for the commitment to higher education variable, and .83 for the respect for authority variable. The involvement index did not have a Cronbach's alpha level reported due to the fact that the items are frequency counts.

Association between Social Bonding and Substance Abuse

Despite the challenges in social bonding research and instrumentation considerations, the construct has proven to be related to substance abuse both theoretically and empirically. Hirschi's (1969) original study assessed the relationship between the bonds of attachment, commitment, involvement, and belief with regard to adolescent substance abuse. Further, subsequent researchers have also determined that the social bond controls for drug and alcohol abuse. Thus, the support for the relationship

between bonding elements and substance abuse makes the construct an important consideration in the study of collegiate hazardous drinking and marijuana use.

Theoretical Support

The inclusion of substance abuse in those acts Hirschi (1969) defined as delinquent is clear. Specifically, he was investigating all acts that the individual believed would be punished by agents of the larger society should they be discovered (Hirschi, 1969). As Hirschi's sample included middle and high school boys, the use of drugs and alcohol would have been punishable by both the school and the police. Indeed, Hirschi assessed for cigarette smoking, drinking beer, wine, or liquor, and number of offenses committed by each participant as ascertained by police records (Hirschi, 1969).

Therefore, it is evident that substance abusing behavior was a component of delinquency in Hirschi's original study and assumed to be subject to the control of social bonding elements. Similarly, in the current study, alcohol abuse and marijuana use were logical behaviors of which social bonding was considered.

Empirical Support

The construct of social bonding has been studied in relation to substance abuse with samples ranging from adolescents (Akers & Lee, 1999; Downs et al., 1997; Ford, 2005; Gilmore et al., 2005; Krohn et al., 1983; Marcos et al., 1986; Massey & Krohn, 1986), to college students (Durkin et al., 2009; Durkin et al., 2007; Durkin et al., 1999; Seredycz & Meyer, 2005; Sun & Longazel, 2008), and adults (Hartwell, 2003). General support has been found for the inverse relationship between social bonding and substance abuse across samples. For example, in the study of 2,626 adolescents, Marcos et al.

(1986) examined the relationship between parental, religious, peer, and educational attachment as well as the endorsement of conventional values, on the use of four categories of drugs. The researchers determined that drug use is correlated most highly with attachment to drug using friends, then endorsement of conventional values, followed by educational attachment, parental attachment, and religious attachment (Marcos et al., 1986). Attachment, commitment, and belief elements also have been significantly correlated with adolescent marijuana use (Akers & Lee, 1999) and researchers have found that involvement in conventional groups predicts lower levels of adolescent drug use (Downs et al., 1997). Therefore, the predictive power of social bonding related to adolescent substance abuse has been supported in the literature.

Results related to collegiate substance abuse are less clear. Durkin et al. (1999) tested the explanatory power of the social bonding model with regard to college student binge drinking and found that the elements of social bonding accounted for almost 25% of the variance of the behavior. In a later study, however, Durkin et al. (2007) examined the relationship between college student drunk driving behaviors and bonding elements and found that commitment and belief had a significant, negative relationship with drunk driving, while the elements of involvement and attachment did not significantly correlate with the behavior (Durkin et al., 2007). Thus, it may be that the type of substance abusing behavior under examination is an important consideration in the utility of social bonding elements as predictors.

Further, the importance of individual bonding elements may shift depending on the dependent variable and sample composition. In the investigation of collegiate drug

use and social bonding, Seredycz and Meyer (2005) determined that involvement and belief elements were significantly correlated to lifetime drug use (accounting for 10% of the variance) and current drug use (accounting for 8% of the variance). Thus, in their study of cannabis, stimulant, and illegal drug use among college students, involvement and belief were found to be the only significant bonding elements (Seredycz & Meyer, 2005). The authors suggest that it may be important to incorporate another construct or theoretical framework into investigations using social bonding. Finally, Sun and Longazel's (2008) study of collegiate substance abuse and social bonding highlights the need for sample-specific consideration in research designs. These researchers sought to examine the relationship between social bonding and binge drinking, drinking and driving, and negative behaviors related to alcohol among 558 college students. The researchers did not include the elements of attachment or belief in their study, however, and involvement included participation in athletic and Greek organizations. Consequently, the findings were mixed: involvement in athletic organizations related positively to binge drinking, attending university events related negatively to drinking and driving, and GPA related negatively to negative behaviors resulting from alcohol use. As Hirschi discovered in his original study, the conventionality of the activity in which the individual is involved effects the utility of the bonding elements on controlling delinquent behavior. Involvement in university Greek and athletic organizations may no longer promote conventionality and thereby may not serve to control for the delinquent behavior of substance abuse. Further, the lack of attachment and belief elements in Sun and Longazel's (2008) empirical work may limit the merit of the study as these elements

have been shown to be important factors in the construct of social bonding. Therefore, careful consideration of the study design in collegiate substance abuse and social bonding research is necessary. Further empirical endeavors studying the college population are warranted to explain mixed findings and provide more definitive results. The current study serves to expand upon and clarify previous research related to social bonding and college student substance abuse.

In addition to studies of adolescent and collegiate substance abuse, Hartwell (2003) studied social bonding elements and substance abuse among adults using a qualitative methodological design. The researcher interviewed 31 homeless substance abusers on 2 separate occasions in order to assess the relationship between lifelong substance abuse and social bonding elements. Hartwell determined that inconsistent and weak bonding elements were common among adult, homeless, substance abusers. Many participants had weak family attachments characterized by volatile and chaotic family environments. Due to weak attachments with conventional others, participants did not adopt the beliefs of conventional society, value school, or commit to conventional activities. In light of the lack of attachment to conventional others, many participants identified their drug of choice as their “best friend” (Harwell, 2003). This study highlights the importance of social bonding elements in the examination of adult substance abuse.

Therefore, in light of Hirschi’s broad definition of delinquency and the inclusion of substance abusing behaviors in his original study, coupled with subsequent research endeavors of adolescent, collegiate, and adult substance abuse, further examination of

bonding elements and drug and alcohol abuse is fitting. The present study contributes to the literature by specifically examining social bonding with regard to collegiate hazardous drinking and marijuana use.

Alternative Control Theory Constructs

Social bonding continues to be the most relevant construct for the present study stemming from control theory, however, within this theoretical orientation exists several additional constructs that warrant consideration. One such alternative concept emerging from control theory is self-control. Gottfredson and Hirschi (1990) explored the construct of self-control with regard to criminal and delinquent behavior hypothesizing that only one type of control, namely self-control, would prevent criminal or delinquent acts. Gottfredson and Hirschi (1990) posited that low levels of individual self-control, coupled with opportunity, leads to crime. The primary criticism of this concept is the premise that criminal acts occurring at all periods of life are the result of an individual's unchanging, low level of self-control (Hirschi & Gottfredson, 2000). The stability of the level of self-control across the lifespan, and across deviant behaviors, has been criticized as unrealistic and unsupported by empirical study (Tittle, Ward, & Grasmick, 2003). In addition, the tautology problem involved in the description of the concept is a noteworthy limitation. The researchers posited that self-control predicts deviant behavior as evidenced by the deviant behavior committed by those with low levels of self-control (Hirschi & Gottfredson, 2000). Therefore, the tautologies of the concept, the lack of a reliable or valid measure of self-control, and the grandiose claim that self-control is stable across

time and situations, contributes to the lack of appeal in utilizing Gottfredson and Hirschi's construct of self-control in the study of collegiate substance abuse.

Another emerging construct stemming from control theory is Tittle's (1995) control balance concept. Tittle (1995) posited that deviance is the result of an unbalanced control ratio. When differences exist between the amount of control to which one is subject and the amount of control to which one is able to exercise, deviance results (DeLisi & Hochstetler, 2002). The primary criticisms of the control balance concept are the lack of supportive empirical studies, the difficulty in categorizing deviance into set typologies, and concern related to what the construct is actually assessing (DeLisi & Hochstetler, 2002). Originally, Tittle sought to categorize all deviant behavior into those acts resulting from a surplus of control and those acts resulting from a deficiency of control (Tittle, 2004). Empirical study has found, however, that any imbalance of control could lead to any form of deviant behavior, contrary to what Tittle's concept predicts (DeLisi & Hochstetler, 2002; Hickman & Piquero, 2001). Therefore, due to the fact that the control balance concept is still in its infancy and continues to be revised as a result of conflicting findings, it does not appear to be the best explanation for deviant acts such as collegiate substance abuse. Although social bonding also has limitations, the plethora of empirical support related to the construct, as well as strong theoretical underpinnings, made it the best derivative of control theory to apply to the study of hazardous drinking and marijuana use among college students. Rather than examining social bonding independently, however, the incorporation of another empirically supported variable serves to enhance the utility and effectiveness of the construct.

Support for the Integration of Social Interest and Social Bonding

Empirical support exists for the predictive power of both social interest and social bonding on collegiate substance abuse when examined independently. Both social interest and social bonding also have limitations when studied in isolation, however, such as difficulty in operational definitions and mixed or contradictory findings. An integration of the two constructs serves to decrease the number of limitations and strengthen the resulting explanatory power, particularly in the study of delinquent, criminal, or dangerous acts (including substance abuse). In fact, Wright, Caspi, Moffitt, and Paternoster (2004) concluded that explanations of crime (and any act with negative legal repercussions) must consider both the individual and the individual's social situation in order to be complete. Therefore, both internal and external elements are necessary in the study of behaviors deemed criminal or delinquent in nature. Although all collegiate substance abuse is not criminal in the legal sense, hazardous drinking has been found to correlate with many negative outcomes for the student at the personal and academic level. The study of internal and external elements with regard to collegiate substance abuse provides a more comprehensive understanding of hazardous drinking and marijuana use and thus can be used to effectively inform interventions. The constructs of social interest and social bonding, when integrated, provide this framework as social interest addresses an internal construct and social bonding accounts for external elements.

Social Interest as Internal

Social interest is conceptualized as an innate, intrinsic quality developed within the individual (Adler, 1956). Therefore, a primary limitation of social interest as an independent perspective from which to explain college student hazardous drinking and marijuana use is the lack of emphasis placed on external or environmental factors. Although not biological in nature, the quality of social interest is an internal construct that is observable through the actions of the individual such as engagement in the classroom or interactions with the family (Adler, 1976). While this internal perspective is valuable, the fact that it is only internal is a limitation in the application of social interest to the study of collegiate substance abuse. Examining internal aspects of the individual provides a partial explanation. To combine social interest with a construct that addresses external or situational elements (such as social bonding) provides a more holistic picture of collegiate hazardous drinking and marijuana use.

Social Bonding as External

Social bonding addresses only external elements such as attachment to parents, school, or conventional friends, involvement in conventional behaviors, commitment to conventional activities, and the adoption of society's conventional belief system. Therefore, a principal insufficiency of social bonding is the lack of attention to internal constructs. Hirschi intentionally chose not to include internal elements or psychological constructs, in his study due to the difficulty in measuring such characteristics (Hirschi, 1969). Internal concepts were assumed to be too subjective for empirical investigation (Akers & Sellers, 2009). Hirschi noted that studying the external element of attachment

encompasses internal components such as the internalization of norms, conscience or superego, thereby making the study of internal aspects unnecessary (Hirschi, 1969). Thus the focus of social bonding is on external elements only, which limits the scope and application of the construct in the study of problematic behaviors such as collegiate substance abuse. An integrated approach coupling internal and external constructs, such as social interest and social bonding, proves to be more advantageous in the study of college student hazardous drinking and marijuana use.

Theoretical Support for the Integration of Social Interest and Social Bonding

Although social interest and social bonding have never been joined before now, both Adler and Hirschi provide support for the integration of internal and external constructs in their writing. In light of the fact that Adler's original construct has been translated to social interest for consistency (Ansbacher & Ansbacher, 1956), initially it also included the dimension of community feeling (Ansbacher, 1992). Adler's (1956) original concept was described as "feeling with the community" (p.142) and striving for an ideal human community progressing toward perfection. This metaphysical description entailed a sense of fellowship in the human community that was not bound by time and geographic location. Rather, the individual was connected to humankind in a cooperating community (Adler, 1964). Therefore, these additional aspects of Adler's original concept, which relate to the feeling of being a member of a larger human community and feeling at home in the world (Ansbacher, 1992), reflect external elements that are neglected in the current definitions and measures of social interest. Although social bonding elements are not directly linked to Adler's definition of his original concept, they serve to address

external elements which, when combined with a current social interest measure, more closely capture Adler's initial sentiments.

Hirschi also provides support for the integration of both internal and external constructs as evidenced by his own research shift to the study of self-control. Although he initially believed the study of internal elements was unnecessary (Hirschi, 1969), Hirschi demonstrated the unsatisfactory nature of exploring only external factors by modifying his own research agenda to explore the study of an internal trait, namely self-control, during the latter portion of his career (Gottfredson & Hirschi, 1990). Self-control refers to an individual's "concern for the long term consequences of one's acts" (Hirschi & Gottfredson, 2000; p.64), which is a substantial shift from the external elements of social bonding. Therefore, the fact that the developer of social bonding began studying an internal construct supports the notion that external bonding elements alone are insufficient. From a theoretical perspective, there is support for the benefits of combining an internal construct with an external construct in the study of human behavior, particularly deviant or criminal acts. Thus social interest, which focuses on an innate, internal characteristic, and social bonding, which addresses external elements, complement each other in such a way as to provide a more thorough understanding of collegiate substance abuse.

Empirical Support for the Integration of Social Interest and Social Bonding

In addition to theoretical support for the integration of social interest and social bonding, previous research endeavors also provide grounds for combining the constructs. The assessment of both internal and external constructs provides stronger correlations

and account for a greater portion of variance in hazardous drinking and marijuana use than either could contribute on its own. Evidence for the utility of coupling social bonding with another construct addressing an internal element already exists in literature. Although social bonding has not been examined simultaneously with social interest to date, many researchers have integrated social bonding with a construct addressing an internal characteristic in order to strengthen predictive models. For example, De Li (2004) studied the relationships between self-control, social bonding, and delinquency in a sample of 4,866 high school students. The author found a significant interaction between self-control and social bonding in that the strength of the impact of bonding elements was contingent upon the individual's level of self-control. Therefore, the interplay between the internal and external constructs proved to be an important component in the results of the study. Further, Kaplan and Cheng-Hsien (2005) explored the relationship between the internal constructs of deviant identity and negative self-feelings with social bonding in a study of 1,019 youth. The authors found support for the moderating effect of bonding elements on the impact of negative self-feelings on deviant behavior. A non-deviant identity and low social bonding elements accounted for 30% of the variance of delinquency, while a deviant identity and low social bonding elements accounted for 47%. Therefore, the interaction between the internal construct (identity) and external construct (social bonding) proved to be important in the predictive power of the model.

Along with the moderating impact of social bonding on deviant identity and delinquency, the construct also has been found to mediate between two variables from

strain theory and delinquency (Ozbay, 2008). In the study of 1,710 high school students, Ozbay sought to determine whether social bonding variables mediated the relationship between strain variables and delinquent behavior. The strain variables included the gap between educational aspirations and educational expectations and the gap between monetary aspirations and educational expectations. Additionally, all four social bonding elements were represented in the investigation. Through data analysis, the researcher found support for the notion that the impact of the strain variables on delinquency was in fact mediated by the four social bonding variables. Thus Ozbay posited that strain theory variables and social bonding elements complete each other in the study of delinquency (Ozbay, 2008). In another example, Veenstra et al. (2010) studied truancy in 2,230 youth and found support for the indirect effect of self-control through social bonding elements. The independent correlation between self-control and truancy was not significant and low ($r = -.17$). The correlations became significant, however, when self-control was coupled with attachment to teachers ($r = -.35$), attachment to parents ($r = -.21$), and prosocial beliefs ($r = -.24$). By addressing internal self-control and external social bonding, the researchers were able to illuminate stronger relationships between the variables. Therefore, empirical evidence exists to support the notion that predictive models are strengthened when social bonding is coupled with an internal construct. It was hypothesized that the combining of social bonding with social interest would produce the same results in the study of collegiate hazardous drinking and marijuana use.

In addition to the possibility of increased predictive power in models explaining collegiate substance abuse, the integration of social interest and social bonding may

provide a more thorough interpretation of the results of empirical study in this area. The literature related to both social interest and social bonding contains mixed or inconsistent findings. It was hypothesized that the coupling of social interest and social bonding together in the same study, would serve to explain previous contradictory findings by considering the simultaneous impact of both constructs. For example, Ginsberg and Greenley (1978) studied marijuana use among undergraduate students from several theoretical perspectives. Specifically, the researchers considered reference group theory, which postulates that marijuana users are emulating others who use marijuana, stress theory, which asserts that users are attempting to escape personal or psychological issues, and the elements of involvement and commitment from the social bonding construct of control theory. The findings indicated that marijuana use is significantly higher among those who admire and respect other marijuana users, have higher levels of psychological distress, and those who are less committed to conventional activities and institutions. Involvement was not significantly related to marijuana use. Therefore, the findings related to social bonding were mixed as the researchers concluded that marijuana use, in essence, may be an effort to integrate into peer groups. The additional examination of social interest serves to explain such findings by also considering participants' level of interest in the welfare of others and sense of belonging in the greater community. Social interest measures would indicate whether the motivation to emulate other marijuana users stems from a low sense of belonging within the greater community and low interest in the interests of others. In other words, if social interest levels are low among marijuana users, the interpretation could be made that this deficiency fuels the attempt to emulate others

who use marijuana as an attempt to feel a sense of belonging in a process whereby the drug use serves to meet a self-focused need of community attachment.

Another example of how the two constructs provide a more thorough explanation of mixed findings relates to Keene and Wheeler's (1994) study of Adlerian lifestyles and substance use in college freshman. Using the Life Style Personality Inventory (LSPI) the researchers examined the relationship between lifestyle themes, a social interest index, and the alcohol and drug abusing behaviors among 103 entering college freshmen. The researchers assessed only internal constructs deemed indicative of personality characteristics such as passive or dependant traits, antisocial or alienated traits, and social interest. Consistent with their hypotheses, the researchers determined positive correlations between several lifestyle themes and substance abuse. Social interest, however, was not found to be significant (Keene & Wheeler, 1994). The addition of social bonding elements to a study such as Keene and Wheeler's (1994) would offer a possible explanation for these contradictory findings. Although low levels of social interest were not found to correlate significantly with substance abusing behavior among the freshmen, the deficiency could manifest in other ways illuminated through the assessment of social bonding elements. Perhaps students with low levels of social interest, who lack feelings of belonging or interest in the welfare of others, would engage in other maladaptive behaviors impacting their bonds with conventional society. Students with deficiencies in social interest may be found to have weak bonding elements such as attachment to school or peers, involvement in conventional activities, or commitment to educational or occupational aspirations. Even if they are not currently abusing

substances, college freshmen with this profile may be more susceptible to later engage in substance abuse in order to evade psychological distress related to the tasks of life (work, friendship, and love), attempt to compensate for low feelings of belonging by abusing substances for group membership purposes, or as a result of low stakes in conformity. Therefore, the study of only internal characteristics is hypothesized to be too narrow to provide complete conceptualizations of students at-risk of substance abuse. By including the examination of an external construct, such as social bonding, to studies such as Keene and Wheeler's (1994), the utility of the investigation increases and provides an accurate profile of at-risk students by examining both social interest and social bonding.

By considering both internal and external characteristics as they relate to hazardous drinking and marijuana use through the assessment of both social interest and social bonding, interventions and treatment for college students can be improved. A more thorough understanding and broader assessment allows treatment plans to be tailored to the development of the appropriate construct, either social interest or social bonding, in the college student. Interventions could serve to foster the stunted innate potential to develop social interest through means suggested by Adler including training in cooperation, empathy enhancement, and learning socially useful ways to manage life's problems (Adler, 1956; 1976). Treatment plans to cultivate the development of social bonding elements could include enhancing the weak elements through involvement in conventional activities such as university and community associations, family counseling to foster greater attachment, and building moral intelligence by adopting conventional belief systems. The integrated approach to understanding collegiate substance abuse

offers more treatment options unique to the student involved and better serves this population.

Summary and Limitations of Relevant Literature

The prevalence of collegiate substance abuse is indisputable, and it is clearly associated with a plethora of negative consequences. Alcohol and marijuana are the most commonly abused substances on college campuses and are related to risky sexual behaviors, sexual victimization, poor academic performance, driving while intoxicated, later alcohol and drug problems, and increased violence. Although many efforts have been made to prevent collegiate substance abuse and provide treatment for college students engaging in dangerous alcohol and drug abusing behaviors, the impact of these efforts has been modest at best. In order to create effective prevention and intervention programs, more information related to the college student who abuses drugs and alcohol is necessary.

Social interest has been studied with regard to both college populations and substance abuse in empirical works. This innate, internal concept stemming from Individual Psychology refers to one's interest in the welfare of others and a sense of belonging in the greater human community (Ansbacher, 1992). Developed levels of social interest have been correlated with many positive outcomes, while deficiencies have been associated with negative consequences, including drug and alcohol abuse. Difficulties related to operationally defining social interest and mixed or inconsistent findings, however, limit the utility of social interest as an independent measure of collegiate substance abuse.

Social bonding also has been examined in relation to substance abuse and with collegiate samples. Stemming from control theory, social bonding refers to four external bonding elements, namely, attachment, commitment, involvement, and belief, which serve to control for delinquent behavior (Hirschi, 1969). Consistent support for the association between social bonding and delinquency exists in the research, yet is not without limitations. The breadth of variation in delinquent behavior and varying strengths of individual bonding elements contribute to mixed or inconsistent findings in the literature. Therefore, social bonding in isolation is insufficient in the study of college student hazardous drinking and marijuana use.

Although both the constructs of social interest and social bonding have been associated with substance abuse and collegiate populations, they had not, to this point, been examined simultaneously as predictors. Theory and research supports their integration as the combining of an internal (social interest) and external (social bonding) construct will more fully capture Adler's original conceptualization of social interest and potentially strengthen social bonding predictive models. The integration of the two constructs provides a more holistic profile of students at-risk for hazardous drinking and marijuana use. Thus, limitations in the conceptualization of the collegiate substance abuser and the lack of empirical investigations including both social interest and social bonding contributed to the need for the current study.

CHAPTER III

METHODOLOGY

In Chapter I, research questions were presented to examine the relationship between social interest, social bonding, and college student hazardous drinking and marijuana use. In Chapter Two, a review of relevant literature revealed a lack of research incorporating both social interest and social bonding constructs in relation to college student substance abuse. Accordingly, the current study sought to contribute to the literature by providing an integrated approach that combines the constructs of social interest and social bonding, thereby assessing both internal and external elements, with regard to collegiate hazardous drinking and marijuana use. Further, the study investigated the associations between both social interest and social bonding and groups of college students engaged in various combinations of substance abusing behavior. The groups consisted of college students who are not hazardous drinkers and do not use marijuana, those who are only hazardous drinkers, those who only use marijuana, and those who are both hazardous drinkers and marijuana users.

The present chapter details the research hypotheses of the current study as well as describe the participants, instrumentation, procedures for data collection, and the data analyses that were employed.

Research Hypotheses

In conjunction with the research questions listed in Chapter I, the following research hypotheses were proposed:

Research Question 1: What portion of the variance in college student self-reported hazardous drinking behavior can be explained by social interest and social bonding above and beyond the portion of variance explained by demographic predictor variables?

Hypothesis 1: A statistically significant portion of variance in college student self-reported hazardous drinking behavior will be explained by social interest and the six social bonding variables above and beyond the amount of variance explained by demographic predictor variables. These demographic variables include gender, athletic status, Greek status, and age of first drink.

Research Question 2: Are there significant mean differences in social interest and social bonding between groups of college students who engage in marijuana use including nonusers, past users, occasional users, frequent users, and daily users?

Hypothesis 2: Significant mean differences in social interest and the six social bonding variables exist between groups of marijuana users including nonusers, past users, occasional users, frequent users, and daily users. Specifically, lower marijuana using groups will have higher mean scores on social interest and social bonding when compared to higher marijuana using groups.

Research Question 3: Are there significant mean differences in social interest and social bonding between groups of college students who (a) do not use marijuana and are not hazardous drinkers, (b) do not use marijuana and are hazardous drinkers, (c) use

marijuana and are not hazardous drinkers, and (d) use marijuana and are hazardous drinkers?

Hypothesis 3: Significant mean differences in social interest and the six social bonding variables exist between groups of college students who (a) do not use marijuana and are not hazardous drinkers, (b) do not use marijuana and are hazardous drinkers, (c) use marijuana and are not hazardous drinkers, and (d) use marijuana and are hazardous drinkers. Specifically, those who do not engage in hazardous drinking or marijuana use will have higher mean scores of social interest and stronger social bonding scores than those who engage in hazardous drinking, use marijuana, or both.

Research Question 4: What effect do social interest and social bonding have on the prediction of group membership in the following four groups of college students: (a) those who do not use marijuana and are not hazardous drinkers, (b) those who do not use marijuana and are hazardous drinkers, (c) those who use marijuana and are not hazardous drinkers, and (d) those who use marijuana and are hazardous drinkers?

Hypothesis 4: Social interest and the six social bonding variables will significantly predict group membership in the following four groups of college students: (a) those who do not use marijuana and are not hazardous drinkers, (b) those who do not use marijuana and are hazardous drinkers, (c) those who use marijuana and are not hazardous drinkers, and (d) those who use marijuana and are hazardous drinkers.

Participants

To obtain traditional college student participants in emerging adulthood (18-25), the researcher sampled from a mid-sized public university in central North Carolina. Purposeful sampling from classes within this University was used to collect the data. To ensure a representative sample from the population of interest, students were sampled from undergraduate classes within the academic disciplines of Counseling and Sociology. Demographics collected from the sample included age, academic year, hours of enrollment, race/ethnicity, gender, Greek organization affiliations, residence during the academic year, religious affiliation, prior legal and academic disciplinary issues as a result of drug or alcohol use, and age of first drink and use of marijuana.

In determining the required sample size for the present study, each research question was considered using the G*Power analysis program. Research question 1 required a sample size of 104, using an alpha level of .05, medium effect size (.15), 7 tested predictors (1 social interest score and 6 social bonding variable scores), and 4 demographic predictors (gender, athletic status, Greek status, and age of first drink), and a desired power of .80 for a multiple regression analysis. Research question 2 required a sample size of 50, using an alpha level of .05, a medium effect size (.15), 5 groups (nonusers, past users, occasional users, frequent users, and daily users), and a desired power of .80 for the MANOVA. Research questions 3 and 4 both required a sample of 56 based on alpha levels of .05, medium effect sizes (.15), and a desired power of .80 with 4 groups of college students determined by hazardous drinking and marijuana using behaviors for the MANOVA and discriminant function analyses. Therefore, research

question 1 required the largest sample size at 104 participants. The researcher obtained a sample size of 300 students to attain a usable sample in each of the four groups of substance users in research questions 3 and 4 (non-users, hazardous drinkers, marijuana users, and dual substance users). This number of participants also accounted for the possibility of missing data or otherwise unusable responses.

Instrumentation

The instrumentation of the current study consisted of (a) the Sulliman Scale of Social Interest (SSSI; Sulliman, 1973), (b) a social bonding questionnaire based on Hirschi's (1969) original measure and Durkin et al.'s (1999) adaptation, (c) the Alcohol Use Disorders Identification Test (AUDIT) (Saunders et al., 1993), (d) a marijuana use index, and (e) a demographics questionnaire.

Sulliman Scale of Social Interest

To evaluate the first independent variable, social interest, the researcher utilized the SSSI. This measure consists of 50 true/false statements providing an overall social interest score (Sulliman, 1973). The instrument has two subscales which consist of (a) amount of concern for and trust in others, and (b) confidence in oneself and one's view of the world. Although a small number of researchers have utilized both the total and subscale scores in their analyses (Curllette, Kern, Groferer, & Whitaker, 1999; Kaplan, 1991), psychometric data for the two subscales are infrequently reported. Thus, for the current study, only the full-scale score was used for the four research questions, and the total SSSI Cronbach's alpha measure was reported. The two subscales were included in a bivariate correlation preliminary analysis on all study variables.

Sample items of the SSSI include, “I like to make new friends,” “People can’t be trusted,” and “A person should be willing to help others at all times” (Sulliman, 1973). Although other measures of social interest exist, the SSSI was used because of the existing evidence of validity and reliability of the measure. Bass et al. (2002) conducted a meta-analysis of 124 studies using 5 prominent social interest measures and determined low correlations between the instruments (ranging from $r = .08$ to $r = .29$). Despite the age of the instrument, the researchers found evidence to support the validity of the SSSI in that the measure had the strongest correlation to constructs of empathy, cooperation, and social support. Adler described empathy and cooperation as fundamental aspects of his concept of social interest (Adler, 1956) so, accordingly, the high correlations provide support for the construct validity of the SSSI. In addition, Fish and Mozdierz (1991) sought to test the validity and reliability of the SSSI by surveying 81 mental health patients, twice, at 6 weeks apart. The authors found that overall pathology ratings, depression scores, insecurity levels, anxiety, and hostility were lower in the high social interest group than the low social interest group. The authors suggested that these results confirm Adler’s assertions that those with low levels of social interest experience increased neurosis, psychosis, and extensive physical and mental insecurity and inferiority (Adler, 1956), and support the use of the SSSI in social interest research. Further, researchers have found the instrument to have strong internal consistency ($r = .90$, KR-20) (Mozdierz et al., 1986). Watkins and Blazina (1994) provided additional support for the test/retest reliability of the SSSI when participants were tested and retested 3 weeks later ($r = .80$), and again 5 weeks later ($r = .75$). Thus the SSSI

continues to be used in social science research and has psychometric strength in recent studies despite being dated.

Hirschi's Social Bonding Questionnaire—Adapted

Social bonding was measured by an adaptation of Hirschi's (1969) social bonding questionnaire (see Appendix C). The original questionnaire contained 3 parts, each consisting of 160 questions measuring attachment, commitment, involvement, and belief elements. Since its conception in 1969, many researchers have used shortened adaptations of Hirschi's original questionnaire to test social bonding theory with various forms of deviant behavior (i.e., Durkin et al., 2007; Krohn et al., 1983; Lackey & Williams, 1995). The proposed study will utilize a version of Hirschi's questionnaire similar to the survey employed by Durkin et al. (1999).

Durkin et al. (1999) created a social bonding questionnaire as a shortened version of Hirschi's original measure. The authors maintained the four areas representing the four elements of the bond. The parental attachment scale consisted of items such as, "My parents want to help me when I have a problem" and "I can share my thoughts and feelings with my parents," which respondents rated on a scale from 1-6. The researchers reported a Cronbach's alpha of .87 for the parental attachment scale. Commitment was measured by commitment to higher education with items such as, "I try hard in school" and "Getting good grades is important to me" with a reported Cronbach's alpha of .80. GPA also was assessed using a 1-6 scale as another indicator of academic commitment. Religious commitment was evaluated with one item assessing the importance of church. The Involvement index was comprised of hours per week spent studying, hours per week

in extracurricular activities, as well as hours per week spent at a place of employment. The authors did not report a Cronbach's alpha level for the involvement subscale in that the items represent frequency reports. Finally, belief was assessed with a respect for authority scale with items such as, "I have a lot of respect for the local police" and "I have a lot of respect for public safety officers." Durkin et al. (1999) reported a Cronbach's alpha of .83 for the respect for authority scale. An additional item representing acceptance of conventional beliefs was included as a way to assess the belief element. This item stated, "To get ahead you have to do some things which aren't right."

An addition to this measure was made for the current study. In a later investigation, Durkin et al. (2007) incorporated a more extensive religious commitment scale which included items pertaining to prayer, religious service, and religious teachings with a reported Cronbach's alpha of .94. Hirschi did not include religious involvement in his original assessment. Due to the subsequent research indicating that the impact of commitment and involvement in religious activity is a significant means to control delinquency (i.e., Marcos et al., 1986; Mesch, 2009; Ryan, Testa, & Fuhua, 2008), however, the additional items of the religious commitment scale were included in the study as a variable representing the element of commitment. Thus, the complete social bonding measure was comprised of six social bonding variables representing the elements of attachment, involvement, commitment, and belief. Attachment was measured by one variable pertaining to parental attachment. Commitment was measured by two variables including commitment to higher education and religious commitment. Involvement was measured by one variable pertaining to hours spent studying, engaging

in extracurricular activities, and working. Finally, belief was measured by two variables pertaining to respect for authority and acceptance of conventional beliefs. A total of 23 items were included in the measure. The units of analyses were the six social bonding variables: parental attachment, commitment to higher education, religious commitment, involvement, respect for authority, and acceptance of conventional beliefs. This was consistent with the instrumentation found in current literature used to assess social bonding elements.

Alcohol Use Disorders Identification Test (AUDIT)

The first dependent variable, hazardous drinking, was measured by the AUDIT (see Appendix D). The AUDIT is a brief alcohol screening questionnaire constructed as a result of a World Health Organization collaborative study (Saunders et al., 1993). Researchers interviewed 1,888 participants from 6 different countries in order to develop AUDIT items relevant to various cultures. Questions for the instrument were selected due to their statistical properties as well as the suitability for the brief screening measure. The AUDIT is comprised of 10 items in which each question has a range of 0 to 4. Thus, scores on the AUDIT can span from 0 to 40. The 10 items represent 3 underlying constructs: alcohol intake, problems due to alcohol consumption, and drinking behaviors (Saunders et al., 1993) but use of the full scale also is recommended; the full-scale will serve as the unit of analysis for the current study.

Researchers tested both the sensitivity and specificity of the instrument after the items had been selected. Sensitivity refers to the proportion of positive scorers who are correctly identified as positive, while specificity refers to the proportion of negative

scorers who are correctly identified as negative (Selin, 2006). The developers of the AUDIT found the instrument to have an overall sensitivity of 92% and overall specificity of 94% (Saunders et al., 1993). Researchers determined that a cutoff score of 8 on the AUDIT provided the most sensitivity and most accurately identified problem drinkers. Some researchers have found, however, that a lowered cutoff score increases the sensitivity of the instrument among female participants (Cherpitel, 1997). In light of this consideration, further research related to gender differences in the AUDIT score is warranted, yet 8 is commonly used as an effective cutoff score for both male and female participants and was the cutoff in the present study.

To test the validity of the AUDIT, the originators used non-drinkers and alcoholics as reference groups. The researchers found that 99% of the alcoholic group scored an 8 or higher on the AUDIT while only 0.5% of the non-drinkers scored 8 or more, serving as evidence of the validity of the instrument (Saunders et al., 1993). Support has been found for instrument reliability with reported Cronbach's alphas ranging from .87 to .90, and with a test/retest reliability coefficient of .85 when participants were retested 13 days later (Conley, 2006). In addition, a meta-analytic review of 24 studies using the AUDIT found scores to be generally reliable with a mean Cronbach's alpha level of .79 (Shields & Caruso, 2003). Thus, researchers have found the AUDIT to be valid and reliable across cultures.

Marijuana Use Index

Measures of marijuana use with college samples often produce categories of users ranging from nonusers to heavy/daily users (Eisenman, Grossman, & Goldstein, 1980;

Stoner, 1988). Although many researchers assess only for frequency of use (Felt et al., 2008; Gillespie, Holt, & Blackwell, 2007; LaBrie et al., 2009; Lewis & Clemens, 2008; Stoner, 1988), a number of researchers have included other aspects in their investigations, including duration of use (Eisenman, Grossman, & Goldstein, 1980) as well as age of first use (McCarthy, Lynch, & Pederson, 2007). To measure marijuana use in the present study, a Marijuana Use Index (see Appendix D) was used in which participants reported how frequently they ingest marijuana currently (over past year), as well as if marijuana has been used in the lifetime. Participants were then classified into four groups adapted from the categorization pattern of Stoner (1988): nonusers (never tried marijuana), past users (tried but have not used in last year), occasional users (less than one time per week), frequent users (one to five times per week), and daily users (at least one time per day). This categorization of marijuana use distinguished between college students who use marijuana and those who have never used the substance or have tried it but subsequently stopped using.

Demographics Questionnaire

The demographics portion of the survey was comprised of 16 items exploring characteristics of the participant such as age, academic year and major, hours of enrollment, race/ethnicity, gender, athletic participation, Greek organization affiliations, residence during the academic year, religious affiliation, prior legal and academic disciplinary issues as a result of drug or alcohol use, and age of first drink and use of marijuana. These demographic items were used to describe the sample and contribute to the analysis of Research Question 1.

Procedures

To obtain participants, university instructors of undergraduate classes in the Counseling and Educational Development and Sociology Department in a mid-sized public university were contacted for participation in the study. Each instructor received an email detailing the purpose of the study and requesting permission to collect data in their classes. Once permission from instructors was obtained, the researcher visited each class and invited undergraduate students to participate. The researcher explained the purpose of the study and described the voluntary and confidential nature of participation. To those students electing to participate, the researcher provided an informed consent document describing the nature of the study, any potential risks, limits of confidentiality, and voluntary participation. The researcher then administered the survey packet comprised of the SSSI, the social bonding questionnaire, the AUDIT, a marijuana use index, and a demographics questionnaire. The survey packet included a total of 102 items that took approximately 20 minutes to complete. The researcher was available to answer questions from participants related to the data collection process. Upon completion of the survey packet, each participant received a list of substance abuse and psychological counseling resources in the community and was entered into a drawing for a Target gift card. The researcher continued to follow this procedure until data from a minimum of 300 participants, who met the inclusion criteria (between 18 and 25 years old with an enrollment status of full-time), were obtained.

Data Analysis

The proposed study was a descriptive design and assessed the relationship between the independent variables of social interest and social bonding and the dependent variables of college student hazardous drinking and marijuana use. The demographic data was assessed using descriptive statistics to describe participant race/ethnicity, gender, age, academic year, enrollment status (full or part-time), residence during the academic year, Greek organization affiliations, religious affiliations, past legal and academic disciplinary issues related to drug and alcohol use, and age of first drink and use of marijuana. As a preliminary analysis, a bivariate correlation was conducted on all study variables, including the two subscales of the SSSI. This correlation matrix was examined to assess for multicollinearity as well as the relationship between variables. In addition, reliability analyses also were conducted by calculating Cronbach's alpha and Kuder-Richardson 20 levels for an estimate of internal consistency on the social bonding variables and the SSSI. See Table 1 for descriptions of the research questions and data analysis.

Hypothesis 1, that a statistically significant portion of variance in college student self-reported hazardous drinking behavior will be explained by social interest and the six social bonding variables above and beyond the amount of variance explained by demographic predictor variables was tested using a hierarchical multiple regression analysis. Multiple regression analysis allows for the study of collective and individual contributions of predictor variables on a criterion variable (Heppner, Wampold, &

Table 1

Descriptions of Research Questions and Data Analyses

Research Question	Hypothesis	Independent (predictor) variable	Dependent (criterion) variable	Data Analysis
1. What portion of the variance in college student self-reported hazardous drinking behavior can be explained by social interest and social bonding above and beyond the portion of variance explained by demographic predictor variables?	A statistically significant portion of variance in college student self-reported hazardous drinking behavior will be explained by social interest and the six social bonding variables above and beyond the amount of variance explained by demographic predictor variables.	Total social interest score and six social bonding variable scores	Self-reported hazardous drinking (score of 0-40)	Hierarchical multiple regression analysis
2. Are there significant mean differences in social interest and social bonding between groups of college students who engage in marijuana use including nonusers, past users, frequent users, and daily users.	Significant mean differences in social interest and the six social bonding variables exist between groups of marijuana users including nonusers past users, occasional users, frequent users, and daily users. Specifically, lower marijuana using groups will have higher mean scores on social interest and social bonding when compared to higher marijuana using groups.	Self-reported marijuana use (5 categories: nonusers, past users, occasional users, frequent users, daily users)	Total social interest score and six social bonding variable scores	Multivariate analysis of variance
3. What effect do social interest and social bonding have on the prediction of group membership in the following four groups of college students: 1) those who do not use marijuana and are not hazardous drinkers, 2) those who do not use marijuana and are hazardous drinkers, 3) those who use marijuana and are not hazardous drinkers, and 4) those who use marijuana and are hazardous drinkers?	Significant mean differences in social interest and the six social bonding variables exist between groups of college students who 1) do not use marijuana and are not hazardous drinkers, 2) do not use marijuana and are hazardous drinkers, 3) use marijuana and are not hazardous drinkers, and 4) use marijuana and are hazardous drinkers. Specifically, those who do not engage in hazardous drinking or marijuana use will have higher mean scores of social interest and stronger social bonding scores than those who engage in hazardous drinking, marijuana use, or both.	Groups of substance use: 1) those who do not use marijuana and are not hazardous drinkers, 2) those who do not use marijuana and are hazardous drinkers, 3) those who use marijuana and are not hazardous drinkers, and 4) those who use marijuana and are hazardous drinkers	Total social interest score and six social bonding variable scores	Multivariate analysis of variance

Table 1 (cont.)

Research Question	Hypothesis	Independent (predictor) variable	Dependent (criterion) variable	Data Analysis
<p>4. What effect do social interest and social bonding have on the prediction of group membership in the following four groups of college students: 1) those who do not use marijuana and are not hazardous drinkers, 2) those who do not use marijuana and are hazardous drinkers, 3) those who use marijuana and are not hazardous drinkers, and 4) those who use marijuana and are hazardous drinkers</p>	<p>Social interest and the six social bonding variables will significantly predict group membership in the following four groups of college students: 1) those who do not use marijuana and are not hazardous drinkers, 2) those who do not use marijuana and are hazardous drinkers, 3) those who use marijuana and are not hazardous drinkers, and 4) those who use marijuana and are hazardous drinkers</p>	<p>Total social interest score and six social bonding variable scores</p>	<p>Group membership in the following four groups: 1) those who do not use marijuana and are not hazardous drinkers, 2) those who do not use marijuana and are hazardous drinkers, 3) those who use marijuana and are not hazardous drinkers, and 4) those who use marijuana and are hazardous drinkers</p>	<p>Discriminant function analysis</p>

Kivlighan, 2008). A hierarchical multiple regression analysis is used when researchers desire to control for a set of predictor variables to assess for the amount of variance explained independent of the influence of the controlled set. In this analysis, the first set of predictor variables was the demographic variables (gender, age of first drink, and Greek or Athletic affiliation) while the second set was the total social interest score and the six social bonding variables. The criterion variable was self-reported hazardous drinking behavior. This analysis provided the amount of explanatory power exhibited by the integrated approach on hazardous drinking above and beyond demographic variables. Further inspection of the standardized beta coefficients indicated which bonding variables and aspects of social interest account for the greatest amount of variance in hazardous drinking behavior.

Hypothesis 2, that significant mean differences in social interest and the six social bonding variables exist between groups of marijuana users including nonusers, past users, occasional users, frequent users, and daily users, and specifically, lower marijuana using groups will have higher mean scores on social interest and social bonding when compared to higher marijuana using groups, was tested using a Multivariate Analysis of Variance (MANOVA). In this analysis, the independent or, grouping, variable was the marijuana use (nonuser, past user, occasional user, frequent user, or daily user) while the dependent variables consisted of the total social interest score and six social bonding variables. A MANOVA determined whether mean differences existed among these groups of users in terms of both social interest and social bonding. A post-hoc analysis of

variance (ANOVA) was performed to determine which group means differed significantly.

Hypothesis 3, that significant mean differences in social interest and the six social bonding variables exist between groups of college students who (a) do not use marijuana and are not hazardous drinkers, (b) do not use marijuana and are hazardous drinkers, (c) use marijuana and are not hazardous drinkers, and (d) use marijuana and are hazardous drinkers, and specifically, those who do not engage in hazardous drinking or marijuana use will have higher mean scores of social interest and stronger social bonding scores than those who engage in hazardous drinking, use marijuana, or both, was tested using a Multivariate Analysis of Variance (MANOVA). In this analysis, the independent, or grouping, variable was the configuration of alcohol abuse and marijuana use (do not use marijuana and are not hazardous drinkers, do not use marijuana and are hazardous drinkers, use marijuana and are not hazardous drinkers, and use marijuana and are hazardous drinkers) while the dependent variables consisted of the total social interest score and six social bonding variables. A MANOVA determined whether mean differences exist among these groups of users in social interest and six social bonding variables. A follow-up analysis of variance (ANOVA) was performed to determine which group means differed significantly.

Hypothesis 4, that social interest and the six social bonding variables will significantly predict group membership in the following four groups of college students: (a) those who do not use marijuana and are not hazardous drinkers, (b) those who do not use marijuana and are hazardous drinkers, (c) those who use marijuana and are not

hazardous drinkers, and (d) those who use marijuana and are hazardous drinkers, was tested using discriminant function analysis. Discriminant function analysis is used to determine the contribution of predictor variables on group membership based on grouping variables (Betz, 1987). The analysis is particularly useful when investigating which variables best capture group differences and predict group membership.

Discriminant analyses is used when categorical, rather than continuous, criterion are being assessed (Betz, 1987). In the current study, the analysis determined whether the predictors, namely, social interest and the six social bonding variables, could significantly predict group membership. The groups entail various combinations of substance abusing behavior including: (a) those who do not use marijuana and are not hazardous drinkers, (b) those who do not use marijuana and are hazardous drinkers, (c) those who use marijuana and are not hazardous drinkers and, (d) those who use marijuana and are hazardous drinkers. Discriminant analysis detailed which set of variables best predicted membership in groups of college student hazardous drinking and marijuana use configurations.

A Priori Limitations

Three a priori limitations were evident that provided important context for this study. First, the data being collected was reliant on self-reports. Although this form of data collection is frequently used in research and, specifically, in studies of drug and alcohol use (i.e., Conley, 2006; DeMartinit & Carey, 2009; Eisenman et al., 1980; Felt et al., 2008; Gillespie et al., 2007), the information is not corroborated to verify accuracy. A second limitation related to the sampling methodology. Participants were purposefully

sampled from college courses in which instructors have given consent. The sample consisted of those students who opted to participate in the study. Therefore, the benefits of probability sampling were lacking and volunteer participants may have represented a skewed subset of the greater college student population at the university. That is, it is unknown how non-participants differed from participants in some systematic manner. Purposeful sampling allowed a wide range of college student data to be collected at a mid-sized university, yet limited the generalizability of students in other geographic regions or who elected to take courses other than those sampled in the study. Third, the sample was being drawn from one university, which might have limited the generalizability of findings.

Pilot Study

To evaluate the proposed procedures of the full dissertation study, a pilot study was conducted. Considering the lack of an integrated model in the research jointly examining social interest and social bonding, coupled with the need for a more thorough understanding of those students at-risk for collegiate hazardous drinking and marijuana use, the pilot study was a useful preliminary step to test the procedures for the full study. The aims of the pilot study were to (a) test the intended procedures and data analyses to be utilized in the full dissertation study, (b) identify the length of time necessary for participants to complete the survey packet, and (c) acquire feedback related to the clarity of items and make changes if necessary prior to the full study. This section details the participants, instrumentation, procedures, and a discussion of implications of the pilot study on the full study.

Research Questions and Hypotheses

The purpose of the pilot study was to examine the relationship between both social interest (an internal construct) and social bonding (an external construct) and collegiate substance abuse. Specifically, the researcher examined the data in response to the same research questions and hypotheses as was examined for the full study. A report of these results is provided in Appendix F.

Participants

The participants of the pilot study included 15 undergraduate students in a counseling course at a mid-sized university in central North Carolina. Data from three students were not included in the pilot study analysis because the 18 to 25 age range or full-time enrollment status inclusion criteria were not met. Therefore, there were a total of 12 participants in the pilot study. The majority of the pilot study sample was female ($n = 8, 67\%$) and participants' ages ranged from 19 to 24. Complete demographic information related to the sample is reported in Appendix F.

Instrumentation

Each pilot study participant completed a survey packet consisting of a) the Sulliman Scale of Social Interest (SSSI; Sulliman, 1973), b) a social bonding questionnaire based on Hirschi's (1969) original measure and Durkin et al.'s (1999) adaptation, c) the Alcohol Use Disorders Identification Test (AUDIT) (Saunders et al., 1993), d) a marijuana use index, and e) a demographics questionnaire. The survey consisted of 99 items. The detailed descriptions of the number of items and scoring of

each instrument are presented in Table 2. Additional descriptive statistics pertaining to the instruments, including Cronbach's alpha levels, are described in Appendix F.

Table 2

Item Numbers and Scoring of Survey Packet Instrumentation

Measure	Items	Scoring
Sulliman Scale of Social Interest	50	1 Total Score, 2 Subscale Scores
Hirschi's Social Bonding Questionnaire-Adapted	23	6 Variable Scores
Alcohol Use Disorders Identification Test	10	1 Total Score
Marijuana Use Index	1	1 Total Score
Demographics Questionnaire	15	

Procedures

After obtaining approval from the Institutional Review Board at the researcher's university, a request was sent to an instructor within the counseling department for the opportunity to conduct the pilot study in his undergraduate course. After permission was received, the researcher arrived during the allotted class time in order to invite students to participate in her study. The researcher distributed the informed consent which detailed information about the purpose of the study, minimal risks involved, and voluntary participation. In addition to the written consent form, the researcher also verbally described the purpose of the study and voluntary nature of participation. After a time for questions related to the informed consent, the researcher distributed the survey packet to the 15 students in the class. The packet included the SSSI, adapted social bonding

questionnaire, AUDIT, marijuana use index, and demographics questionnaire, totaling 99 items. Participants were instructed not to write their name on any of the survey items and assured that the information they reported would not be linked to them at any point in the study.

All students in the class opted to participate in the study. The first student completed the survey packet in 11 minutes and the last student completed the survey in 16 minutes. Each participant was given a list of referral sources for both substance abuse and psychological counseling at the university and within the surrounding local area. In addition, all students who completed the survey were entered into a drawing for a Target gift card.

Data Analysis and Results

In order to address the research questions and hypotheses that were to be addressed in the full study, data analyses were conducted even though sample sizes were insufficient for meaningful results. Additionally, Cronbach's alpha measures were calculated on the social bonding variables which comprise Hirschi's Social Bonding Questionnaire—Adapted as well as the AUDIT. A Kuder-Richardson 20 (KR20) coefficient was calculated on the total SSSI as the data is dichotomous. Complete results of the data analyses for the pilot study are detailed in Appendix F.

Discussion and Implications for Full Study

The pilot study illuminated several changes for the full study. These changes refer to the specified duration of time needed to complete the survey packet as well as adjustments to specific survey items. Prior to the pilot study, instructors were told that

survey packet would take student participants approximately 30 minutes to complete. The actual duration of time required to complete the survey, however, ranged from 11 to 16 minutes in the pilot study. Therefore, this change was made in the recruitment letters which were used to request instructors' permission to collect data in their classes.

Additionally, three items in the demographic questionnaire were altered. First, rather than asking students to indicate whether they are full-time or part-time, the question was re-worded to ask the number of credit hours in which the student currently is enrolled. Thus, the researcher then determined full-time or part-time status in accordance with university policy (12 credit hours for full-time). This change was made to ensure consistency in the understanding of full-time enrollment. Secondly, the two items asking participants to indicate which legal or academic repercussions they have encountered as a result of alcohol and drug use did not include a "none of the above" response, which proved to be confusing for students. This answer choice was added to these two items in the full dissertation study.

Finally, the Marijuana Use Index was slightly altered based on feedback from several pilot study participants. Rather than asking one questions about total frequency of marijuana use including the options: (a) never, (b) not in the past year, (c) less than 1 time per week, (d) 1-5 times per week, and (e) at least 1 time most days, the single item was split into two questions referring to current marijuana use and lifetime marijuana use. Those who have not used marijuana in the past year were classified as either "nonusers" or "past users" depending on their response to the lifetime marijuana use item. This

adjustment decreased the confusion for students who used marijuana in the past but have since stopped using.

CHAPTER IV

RESULTS

This study was an examination of the relationships among social interest, social bonding, and collegiate hazardous drinking and marijuana use. Specifically, the present study explored the amount of variance in hazardous drinking explained by social interest and social bonding; differences pertaining to social interest and social bonding among groups based on marijuana use; differences pertaining to social interest and social bonding among groups of college students who are not hazardous drinkers and do not use marijuana, are only hazardous drinkers, only use marijuana, and those who are both hazardous drinkers and marijuana users; and examined whether social interest and social bonding variables could significantly predict membership into the groups of substance use configurations.

The present Chapter describes the demographic characteristics of the sample, the reliability coefficients for the instrumentation used in the study, and the results of the analyses performed to test each research hypothesis.

Description of the Sample

A total of 366 survey packets were distributed to students in 17 undergraduate classes. Of the 366 potential participants, 300 met the inclusion criteria and were included in the analysis. Completed packets that were excluded were completed by students who were outside the age parameters (18-25) ($n = 36$), enrolled in less than the

number of hours required for full time enrollment status (12 hours) ($n = 13$), or did not complete the survey in its entirety ($n = 17$). The complete demographic data of the sample is detailed in Table 3.

Table 3
Demographic Data of Sample ($N=300$)

Variable	<i>M/SD</i>	Fr	Sph	Jnr	Snr	Total
TOTAL		19	34	82	165	300 (100%)
AGE	21.05/1.45					
GENDER*						
Female		15	26	68	128	237 (79.30%)
Male		4	8	14	36	62 (20.70%)
RACE						
Asian		2	2	3	3	10 (3.33%)
Black/AA		9	14	25	49	97 (32.34%)
Latino/Hisp.		1	0	1	8	10 (3.33%)
Native Amer.		0	0	0	1	1 (.33%)
White/Cauc.		7	15	47	97	166 (55.33%)
Other		0	3	6	7	16 (5.34%)
ATHLETE						
No		18	34	80	159	291 (97%)
Yes		1	0	2	6	9 (3%)
GREEK						
No		17	34	74	139	264 (88%)
Yes		2	0	8	26	36 (12%)
RELIGION						
None		3	6	14	30	53 (17.67%)
Buddhist		0	0	0	1	1 (.33%)
Christian		13	22	60	112	207 (69%)
Hindu		0	0	1	0	1 (.33%)
Muslim		0	0	1	1	2 (.67%)
New age		0	0	1	1	2 (.67%)
Spirit. not relig.		0	6	5	19	30 (10%)
Other		3	0	0	1	4 (1.33%)
Rel. Import.	3.38/1.51					
Spir. Import.	3.77/1.40					
RESIDENCE*						
Apartment		2	17	50	112	181 (60.54%)
Dorm		16	11	16	20	63 (21.07%)
Greek house		0	0	0	1	1 (.33%)
Parent/family		1	6	16	30	53 (17.73%)
Other		0	0	0	1	1 (.33%)

Note: * Gender and Residence are out of 299 due to missing data. Religious and spiritual importance ratings were reported on a 5-point scale. Fr = Freshman; Sph = Sophomore; Jnr = Junior; Snr = Senior; Black/AA = Black/African American; Latino/Hisp = Latino/Hispanic; Native Amer. = Native American; White/Cauc. = White/Caucasian; Spirit. not relig. = Spiritual but not Religious; Rel. Import. = Religious Importance; and Spir. Import. = Spiritual Importance.

As depicted in Table 3, the average age of sample participants was 21.05 ($SD = 1.45$). The majority of participants were female ($n = 237, 79.30\%$), in their senior year of college ($n = 165, 55\%$), and Caucasian ($n = 166, 55.33\%$). A small number of participants were student athletes ($n = 9, 3\%$) and, similarly, a small portion were involved in Greek-life ($n = 36, 12\%$). The majority of the sample identified as Christian ($n = 207, 69\%$) with a mean religious importance rating of 3.38 (on a 5- point scale) and a mean spiritual importance rating of 3.77 (on a 5-point scale). Finally, the majority of participants reported living in an off campus apartment ($n = 181, 60.54\%$).

Descriptive Statistics of Instruments

Each participant completed the survey packet comprised of the SSSI, Hirschi's Social Bonding Questionnaire—Adapted, AUDIT, Marijuana Use Index, and demographics questionnaire, totaling 102 items. The mean Total Social Interest score for the sample was 40.73 ($SD = 6.54$) and mean AUDIT score was 5.30 ($SD = 5.03$). The complete descriptive statistics of the instruments are provided in Table 4.

Table 4

Descriptive Statistics of Instruments

Instrument/Subscale	<i>M</i>	<i>SD</i>	# of Items
Total SSSI	40.73	6.54	50
SSSI-1	11.44	2.47	15
SSSI-2	17.11	2.67	20
Parental Attachment	5.30	.87	6
Religious Commitment	3.99	1.83	4
Commitment to Education	5.63	.47	4

Table 4 (cont.)

Instrument/Subscale	<i>M</i>	<i>SD</i>	# of Items
Involvement	2.84	.87	3
Respect for Authority	4.43	1.22	3
Conventional Beliefs	4.75	.94	3
AUDIT	5.30	5.03	10
Marijuana Index	1.64	.93	1

Prior to addressing the research questions in the study, a correlation matrix between the social interest and social bonding scales was examined. The purpose of this matrix was to assess the relationship between social interest and social bonding variables as well as rule out the existence of multicollinearity. Results indicate that the majority of social interest and social bonding variables were significantly correlated but these correlations were modest and multicollinearity was not a concern in subsequent analyses (Table 5). Included in Table 5 are the reliability estimates for study measures. Cronbach's alpha levels for the total AUDIT and four of the social bonding variables were above the recommended .70 level for internal consistency for social science research (Heppner & Heppner, 2004). The two social bonding variables that failed to meet the .70 alpha level were Conventional Beliefs ($\alpha = .60$) and Involvement ($\alpha = .14$). It is likely that the small number of items ($n = 3$) in the Conventional Beliefs scale contributed to the low alpha level. Due to the fact that the Involvement measure assessed for frequency reports of time spent in various activities (work, studying, and extracurricular activities) such that increased time spent in one activity would logically result in decreases in other activities,

it was expected that there would be low internal consistency. The Kuder-Richardson 20 (KR20) coefficient was used for the total SSSI scores as the data was dichotomous, with a KR20 coefficient of .86.

Table 5
Correlation Matrix of all Study Variables

	Total SSSI	SSSI-1	SSSI-2	Att.	Rel. Com	Com. Edu	Invol.	Conv. Belief	Resp. Auth.	Aud
Tot. SSSI	.86	-	-	.34	.26	.37	.23	.57	.36	-.23
SSSI-1	.86**	-	-	-	-	-	-	-	-	-
SSSI-2	.87**	.60**	-	-	-	-	-	-	-	-
Att.	.29**	.21**	.30**	.87	.16	.15	.06	.08	.23	-.04
Rel. Com	.24**	.24**	.14*	.15**	.96	.16	.14	.25	.28	-.32
Com. Edu	.29**	.25**	.22**	.12*	.13*	.73	.44	.51	.30	-.22
Involv.	.08	.05	.08	.02	.05	.14*	.14	.07	.03	.24
Con. Bel.	.41**	.44**	.27**	.06	.19**	.34**	.02	.60	.48	-.44
Res. Auth.	.31**	.28**	.22**	.20**	.26**	.24**	.01	.35**	.87	-.38
Aud.	-.19**	-.26**	-.10	-.03	-.28**	-.17**	.08	-.31**	-.32**	.82

Note: All reliability coefficients bolded on the diagonal were calculated using Cronbach's alpha with the exception of Total SSSI, which was calculated using the Kuder-Richardson 20 (KR-20). The coefficients above the diagonal are the corrected correlations while those below the diagonal are the actual correlations. Due to the inability to calculate the reliability coefficients of the SSSI-1 and SSSI-2, the corrected correlations for these two variables are unavailable. Tot. SSSI = Total SSSI; Att. = Parental Attachment; Rel. Com. = Religious Commitment; Com. Edu. = Commitment to Higher Education; Invol. = Involvement; Conv. Bel. = Conventional Beliefs; and Aud = AUDIT

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

Research Hypothesis One

The first research hypothesis, that a statistically significant portion of variance in college student self-reported hazardous drinking behavior would be explained by social interest and the six social bonding variables above and beyond the amount of variance explained by demographic predictor variables, was addressed using a hierarchical multiple regression analysis. The following demographic variables were entered into the regression in the first step: (a) Gender, (b) Athletic Status, (c) Greek-life Status, and (d) Age of First Drink. With these demographic factors in the regression analysis, the Total

Social Interest score was added to the equation in the second step, and social bonding variables added in the third step (Table 6).

Table 6

Variance of Hazardous Drinking Explained by Social Interest and Social Bonding

Regression Model	<i>R</i>	<i>R</i>²	Adjusted <i>R</i>²	ΔR^2	<i>F</i>
Step 1: Demographic Variables	.20	.04	.03		2.98*
Step 2: Total SSSI Scores	.25	.06	.05	.02	3.98**
Step 3: Social Bonding Variables	.46	.21	.18	.15	6.80***

Note: * $p < .05$ ** $p < .01$. *** $p < .001$.

In the first step, the four demographic variables accounted for a significant but modest portion of the variance in collegiate hazardous drinking ($R^2 = .04$, $R^2_{adj} = .03$, $F(4, 29) = 2.98$, $p < .05$). In the second step, the Total Social Interest score accounted for a significant but modest portion of the variance in collegiate hazardous drinking beyond the demographic predictors ($R^2 = .06$, $R^2_{adj} = .05$, $F(5, 289) = 3.98$, $p < .01$). Finally, in the third step, the six social bonding variables accounted for a significant portion of the variance in collegiate hazardous drinking beyond that predicted by the demographic variables and social interest ($R^2 = .21$, $R^2_{adj} = .18$, $F(11, 283) = 6.80$, $p < .01$). The results of the regression for all three models were significant with an increasing R^2 score, thus indicating that the seven predictors of social interest and social bonding significantly explained the variance of hazardous drinking behavior above and beyond demographic predictor variables. The demographic, social interest, and social bonding variables together accounted for 21% of the variance in collegiate hazardous drinking.

Table 7 depicts the standardized beta coefficients of the demographic, social interest, and social bonding variables when all were in the regression equation. Significant variables include Age of First Drink, Greek-life Status, Religious Commitment, Conventional Beliefs, and Respect for Authority. Although Total Social Interest was significant in the second step of the regression when controlling for demographic variables ($\beta = -.16, t = -2.78, p < .05$), it was no longer significant when social bonding variables were added in the third step.

Table 7

Contributions of Individual Demographic, Social Interest, and Social Bonding Variables

Variable	B	SE B	β	t
Age of first drink	.12	.05	.12	2.29*
Gender	-.39	.66	-.03	-.60
Athletic status	-.66	1.57	-.02	-.42
Greek-life status	1.70	.85	.11	2.01*
Total SSSI	-.01	.05	-.01	-.11
Parental Attachment	.23	.32	.04	.71
Religious Commitment	-.52	.15	-.19	-3.43**
Commitment to Edu	-.28	.61	-.03	-.46
Involvement	.44	.31	.08	1.42
Conventional Beliefs	-.87	.32	-.17	-2.68**
Respect for Authority	-.88	.24	-.22	-3.63***
R^2		.21		
F		6.80***		

Note: Commitment to Edu = Commitment to Higher Education.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Research Hypothesis Two

To address the second research hypothesis, that significant mean differences in social interest and the six social bonding variables exist between groups of marijuana users including nonusers, past users, occasional users, frequent users, and daily users, a MANOVA was conducted (see Table 8). Specifically, it was hypothesized that lower marijuana using groups would have higher mean scores on social interest and social bonding when compared to higher marijuana using groups. The results of the omnibus MANOVA were significant at the .001 level ($\Lambda=.75$, $F(28, 1043.43) = 3.06$), indicating that there was a significant difference in reported social interest and social bonding based on marijuana use category.

Table 8

Social Interest and Social Bonding Differences between Groups of Marijuana Users

Variable	Λ	F	df ₁	df ₂
Marijuana Use	.75	3.06***	28	1043.43

Note: *** $p < .001$.

Due to the significant results of the MANOVA, the univariate between-subjects effects were examined to determine where differences existed based on use category (Table 9). Specifically, between subject effects were found for Total Social Interest ($p < .05$), Religious Commitment ($p < .01$), Conventional Beliefs ($p < .001$), and Respect for Authority ($p < .001$).

Table 9
Between Subjects Effects of Marijuana Use Categories

Variable	F
Total SSSI	2.53 [*]
Parental Attachment	1.38
Religious Commitment	5.03 ^{**}
Commitment to Education	2.02
Involvement	.43
Conventional Beliefs	5.26 ^{***}
Respect for Authority	15.44 ^{***}

Note: ^{*} $p < .05$. ^{**} $p < .01$. ^{***} $p < .001$.

To assess the final statement of hypothesis two (lower marijuana using groups will have higher mean scores on social interest and social bonding when compared to higher marijuana using groups), post-hoc Tukey tests were performed on variables found significant in the ANOVA tests (Total Social Interest, Religious Commitment, Conventional Beliefs, and Respect for Authority). The significant pairwise contrasts are listed in Table 10. Nonusers differed significantly from daily users on the Religious Commitment variable ($p < .001$). Nonusers differed significantly from occasional users ($p < .05$) and daily users ($p < .01$) on the Conventional Beliefs variable. Further, past users also differed significantly from daily users ($p < .05$) on the Conventional Beliefs variable. Nonusers differed significantly from occasional ($p < .001$), frequent ($p < .001$), and daily users ($p < .001$) on the Respect for Authority variable. Past users also differed significantly from frequent ($p < .01$) and daily users ($p < .001$) on the Respect for

Authority Variable. Finally, occasional users differed significantly from daily users ($p < .05$) on the Respect for Authority variable. Although the ANOVA for Total Social Interest revealed statistical significance between groups of marijuana users, post-hoc Tukey tests did not indicate significant pairwise contrasts. This lack of significance in the Tukey test is hypothesized to be the result of overcorrection in that unbalanced groups were used in the analysis.

Table 10

Post-hoc Tukey Test Pairwise Contrasts between Marijuana Use Groups

Variable	Marijuana Use Group (I)	Marijuana Use Group (J)	Mean Difference (I-J)	SE
Religious Commit.	Nonuser	Daily User	1.67***	.40
Conventional Beliefs	Nonuser	Occasional	.40*	.14
		Daily User	.72**	.21
	Past User	Daily User	.67*	.22
Respect Auth.	Nonuser	Occasional	.78***	.17
		Frequent	1.31***	.25
		Daily User	1.56***	.251
	Past User	Frequent	.92**	.27
		Daily User	1.17***	.27
		Occasional U.	Daily User	.78*

Note: Occasional = those who occasionally use marijuana; Frequent = those who frequently use marijuana; Religious Commit. = Religious Commitment; and Respect Auth. = Respect for Authority.

* $p < .05$. ** $p < .01$. *** $p < .001$.

The means of the social interest and social bonding variables also were examined according to marijuana using group and are listed in Table 11.

Table 11**Social Interest and Social Bonding Means by Marijuana Using Group**

Marijuana Use	SSSI	Attach.	Rel. Commit.	Commit. Higher Edu	Involv.	Conv. Beliefs	Respect Authority
Nonuser	41.73	5.30	4.44	5.67	2.80	4.96	4.94
Past User	41.33	5.36	3.94	5.72	2.93	4.90	4.54
Occasional User	40.03	5.36	3.87	5.53	2.84	4.56	4.16
Frequent User	37.79	5.30	3.57	5.65	2.94	4.44	3.63
Daily User	39.38	4.91	2.77	5.51	2.72	4.24	3.38

Note: Attach. = Parental Attachment; Rel. Commit. = Religious Commitment; Commit. Higher Edu. = Commitment to Higher Education; Involv. = Involvement; and Conv. Beliefs = Conventional Beliefs.

Research Hypothesis Three

To address research hypothesis three, that significant mean differences in social interest and the six social bonding variables exist between groups of college students who (a) do not use marijuana and are not hazardous drinkers, (b) do not use marijuana and are hazardous drinkers, (c) use marijuana and are not hazardous drinkers, and (d) use marijuana and are hazardous drinkers, a MANOVA was conducted (see Table 12). Specifically, it was hypothesized that those who did not engage in hazardous drinking or marijuana use would have higher mean scores of social interest and stronger social bonding scores than those who engaged in hazardous drinking, used marijuana, or both. The results of the omnibus MANOVA test were significant at the .001 level ($\Lambda=.74$, $F(21, 833.27) = 4.33$) indicating that there was a significant difference between groups on social interest and social bonding variables.

Table 12**Social Interest and Social Bonding Differences between Groups of Substance Use Configurations**

Variable	Λ	F	df ₁	df ₂
Substance Use	.74	4.33 ^{***}	21	833.27

^{***} $p < .001$.

Due to the significant results of the MANOVA, the univariate between-subjects effects were assessed to examine differences on each of the social interest and social bonding variables based on the four configurations of drinking and marijuana use (Table 13). Specifically, between subject effects were found for Total Social Interest ($p < .01$), Religious Commitment ($p < .001$), Conventional Beliefs ($p < .001$), and Respect for Authority ($p < .001$).

Table 13**Between Subjects Effects of Substance Use Configurations**

Variable	F
Total SSSI	4.53 ^{**}
Parental Attachment	2.39
Religious Commitment	11.33 ^{***}
Commitment Education	2.13
Involvement	1.55
Conventional Beliefs	7.99 ^{***}
Respect for Authority	17.37 ^{***}

^{**} $p < .01$

^{***} $p < .001$

To assess the final statement of hypothesis three (those who do not engage in hazardous drinking or marijuana use will have higher mean scores of social interest and stronger social bonding scores than those who engage in hazardous drinking, marijuana use, or both), post-hoc Tukey tests were performed on variables found significant in the ANOVA tests (Total Social Interest, Religious Commitment, Conventional Beliefs, and Respect for Authority). The significant pairwise contrasts are listed in Table 14. Those who are neither hazardous drinkers nor marijuana users (group 1) differed significantly from those who are both hazardous drinkers and marijuana users (group 4) on Total Social Interest ($p < .01$). Those who were neither hazardous drinkers nor marijuana users (group 1) differed significantly from those who are both hazardous drinkers and marijuana users (group 4) on the variable of Religious Commitment ($p < .001$). Additionally, marijuana users only (group 3) differed significantly from those who were both hazardous drinkers and marijuana users (group 4) on the variable of Religious Commitment ($p < .001$). Those who were neither hazardous drinkers nor marijuana users (group 1) differed significantly from those who were both hazardous drinkers and marijuana users (group 4) on the variable of Conventional Beliefs ($p < .001$). Those who were neither hazardous drinkers nor marijuana users (group 1) differed significantly from those who were marijuana users only (group 3) ($p < .001$) and both hazardous drinkers and marijuana users (group 4) ($p < .001$) on the variable of Respect for Authority.

Table 14**Post-hoc Tukey Test Pairwise Contrasts between Substance Use Configuration Groups**

Variable	Marijuana Use Group		Mean Difference (I-J)	SE
	(I)	(J)		
Total Social Interest	Neither	Both	3.69**	1.00
Religious Commit.	Neither	Both	1.52***	.27
	Marij. User	Both	1.46***	.32
Conventional Beliefs	Neither	Both	.68***	.14
Respect Auth.	Neither	Marij. User	.68***	.17
		Both	1.20***	.18

Note: Neither = those students who are not hazardous drinkers and do not use marijuana; Marij. User = those students who are marijuana users only; and both = those students who are hazardous drinkers and marijuana users. Respect Auth = Respect for Authority

** $p < .01$

*** $p < .001$

The means of the social interest and social bonding variables also were examined according to substance use configuration groups and are listed in Table 15.

Table 15**Social Interest and Social Bonding Means by Groups of Substance Use Configurations**

Substance Use Configurations	Social Interest and Social Bonding Means						
	SSSI	Attach.	Rel. Commit.	Commit. Higher Edu.	Involv.	Conv. Beliefs	Respect Authority
Neither	41.69	5.30	4.34	5.69	2.79	4.96	4.82
Hazardous drinker	40.87	5.49	3.70	5.69	3.20	4.81	4.62
Marijuana User	40.72	5.44	4.27	5.55	2.81	4.64	4.14
Both	38.00	5.05	2.81	5.55	2.88	4.28	3.61

Note: Attach. = Parental Attachment; Rel. Commit. = Religious Commitment; Commit. Higher Edu. = Commitment to Higher Education; Involv. = Involvement; and Conv. Beliefs = Conventional Beliefs.

Research Hypothesis Four

Hypothesis four, that social interest and the six social bonding variables would significantly predict group membership in the following four groups of college students: (a) those who do not use marijuana and are not hazardous drinkers, (b) those who do not use marijuana and are hazardous drinkers, (c) those who use marijuana and are not hazardous drinkers, and (d) those who use marijuana and are hazardous drinkers, was examined using a discriminant function analysis (see Table 16). The results indicated the existence of one significant function predicting membership into the substance use configuration groups. The first function accounted for 79% of the variance and was significant at the .001 level.

Table 16

Discriminant Function Analysis of Substance Use Configurations

Function	Eigenvalue	% of Variance	Canonical Correlation	Λ	df
1	.258 ^{***}	79.0	.45	.74	21
2	.046	14.2	.21	.94	12
3	.022	6.8	.148	.98	5

^{***} $p < .001$.

In light of the significance of the first function, the standardized canonical discriminant function coefficients were assessed to determine the contributions of each individual variable to the function (see Table 17). This function was defined most by Religious Commitment, Respect for Authority, and Conventional Beliefs. Given these results, Function 1 was labeled *Adherence to Authority*.

Table 17**Standardized Canonical Discriminant Function Coefficients**

Variable	Function 1
Total SSSI	.10
Parental Attachment	-.02
Religious Commitment	.47
Commitment Edu	-.04
Involvement	-.12
Conventional Beliefs	.31
Respect for Authority	.63

Cross-tabulation between predicted group membership and actual group membership based on substance use configurations depicted the accuracy of the discriminant function in predicting group membership. The *Adherence to Authority* function resulted in correct predictions of 44.3% of the participants ($n = 133$). Specifically, the function correctly classified 47.1% of those who were not hazardous drinkers nor marijuana users, 39.1% of those who were hazardous drinkers only, 31.3% of those who were marijuana users only, and 53.6% of those who were both hazardous drinkers and marijuana users (see Table 18).

Table 18**Accurately Predicted Cases Using Adherence to Authority Discriminant Function**

Actual Group	Predicted				Total
	Neither	Hazardous	Marijuana	Both	
Neither	<i>74</i> (47.1%)	34 (21.7%)	27 (17.2%)	22 (14.0%)	157 (52.3%)
Hazardous Drinkers	6 (26.1%)	<i>9</i> (39.1%)	3 (13.0%)	5 (21.7%)	23 (7.7%)
Marijuana Users	20 (31.3%)	14 (21.9%)	<i>20</i> (31.3%)	10 (15.6%)	64 (21.3%)
Both	6 (10.7%)	9 (16.1%)	11 (19.6%)	<i>30</i> (53.6%)	56 (18.7%)
Total	106 (33.3%)	66 (22.0%)	61 (20.3%)	67 (22.3%)	300 (100%)

Note: Italicized numbers on the diagonal indicate accurately predicted cases ($n = 133$).

Summary

This chapter depicted the results of the study by detailing the descriptive data of the sample, descriptive statistics of the instruments, and the results of each analysis corresponding to the four research hypotheses. The first hypothesis was supported, in part, as social interest and social bonding were found to account for a significant portion of the variance of collegiate hazardous drinking above and beyond the demographic variables of Gender, Age of First Drink, Greek-life Status, and Athletic Status. The full model of demographic, social interest, and social bonding variables accounted for 21% of the variance of collegiate hazardous drinking. Although Total Social Interest did contribute above and beyond the demographic variables in step two of the analysis, it was no longer significant once the social bonding variables were introduced into the regression equation. The significant variables in the final step of the regression included Religious Commitment, Conventional Beliefs, Respect for Authority, Age of First Drink,

and Greek-Life Status. The second research hypothesis was supported as significant mean differences in social interest and social bonding were found between groups of marijuana users. Specifically, differences in Total Social Interest, Religious Commitment, Conventional Beliefs, and Respect for Authority existed between categories of marijuana use. Research hypothesis three also was supported as significant mean differences in social interest and social bonding were found between groups of students who neither engaged in hazardous drinking nor used marijuana, engaged in hazardous drinking only, used marijuana only, and those who engaged in both hazardous drinking and marijuana use. Specifically, significant differences existed between the substance use configuration groups based on Total Social Interest, Religious Commitment, Conventional Beliefs, and Respect for Authority. Finally, the fourth research hypothesis was supported as one function of the social interest and social bonding variables significantly predicted membership into the substance use configuration groups. This function, labeled *Adherence to Authority*, accounted for 79% of the variance and correctly classified 44.3% of the participants in the study.

CHAPTER V

DISCUSSION

This study was designed to explore the associations between social interest, social bonding, and collegiate hazardous drinking and marijuana use. Although both social interest and social bonding have been examined with regard to substance abuse, the two constructs have not been joined in the same study until now. The research questions and aims of the study were presented in Chapter I. The second chapter detailed the relevant literature pertaining to the constructs of the study. Chapter Three contained depictions of the procedures and data analyses and Chapter IV outlined the obtained results. In the present chapter, the results are discussed and integrated into the relevant literature. In addition, limitations, implications for counselors and counselor educators, and suggestions for future research are addressed.

Summary of the Sample

The 300 participants in this study were full-time undergraduate students in emerging adulthood between the ages of 18 and 25 (Arnett, 2005). As this developmental period has been found to have the highest prevalence drug and alcohol use, it was appropriate to sample from students within this age range for the current study. The majority of participants in the current study were female, in their senior year of college, white, Christian, and living in an off campus apartment. The ratio between male and female participants in this study (21% male; 79% female) was comparable to the ratio of

the University at which data was gathered (34% male; 66% female). However, the proportion of ethnic minority participants in the study (44.7%) was higher than the total University ethnic minority enrollment (27%). This large representation of minority students, including 32% identifying as Black/African American, may have implications on the results of the study as African Americans consume smaller amounts of alcohol than the national average (SAMHSA, 2010). Additionally, only a small number of participants were athletes or involved in Greek-life, which closely mirrors the small percentages of student athletes and number of fraternity and sorority members within the University at large.

A total of 79 (26.3%) of participants met criteria for hazardous drinking in the current study. This percentage is lower than previous studies (DeMartini & Carey, 2009) and may be related to the proportion of minority students in the current sample. One hundred and twenty students (40%) reported using marijuana in the past year, which is comparable to data in previous studies (Johnston et al., 2010).

Relationship between Social Interest and Social Bonding

As a preliminary analysis, the relationships between the study variables were examined. The results revealed that Total Social Interest and all social bonding variables, except Involvement, were significantly correlated at modest levels. These findings indicate that an association exists between social interest and social bonding, yet the low correlations suggest the constructs are measuring unique attributes. With regard to the literature pertaining to both social interest and social bonding, these results are not surprising. Adler (1956) described social interest as an internal potential summarized to

mean interest in the welfare of others. In Adler's original conceptualization, however, social interest also included a dimension referred to as community feeling, consisting of feeling at home in the world and striving toward an ideal human community (Ansbacher, 1992). For the sake of consistency, Adler's original construct was translated only to mean social interest and the metaphysical description of community feeling has been neglected in the empirical literature (Ansbacher & Ansbacher, 1956). Therefore, the additional aspects of Adler's original construct, which have a more external focus such as feeling a part of a larger human community (Ansbacher, 1992), are absent from many social interest studies. It was hypothesized that the externally focused construct of social bonding may serve to more fully explain the entirety of Adler's original concept, and thus a relationship between social interest and social bonding would exist.

Further, empirical evidence suggests that social bonding models are strengthened when they include constructs addressing internal characteristics (De Li, 2004; Kaplan & Cheng-Hsien, 2005). Although intentionally not included in his original study, Hirschi later adapted his research agenda to explore the internal trait of self-control, demonstrating the value of addressing internal as well as external constructs (Gottfredson & Hirschi, 1990). Therefore, it also was hypothesized that the internal characteristic of social interest may enhance and strengthen the externally-focused social bonding construct, and a relationship may exist between the two. The results of the preliminary analyses revealed significant correlations between social interest and social bonding, thus supporting these hypotheses. At the same time, the modest strength of the correlations

indicated no issues of multicollinearity for subsequent analyses, arguing for the distinctiveness of the two constructs.

Social Interest, Social Bonding, and Collegiate Hazardous Drinking

According to the literature, there are theoretical and empirical associations between the constructs of social interest and social bonding and alcohol use. Adler (1956) purported that substance abuse occurs as the result of failing to develop social interest. He argued that those who engage specifically in alcohol abuse are evading the task of solving the problems of life, which requires a degree of social utility that these individuals do not possess (Adler, 1964). Empirically, researchers have found social interest to be correlated with alcohol abuse behavior in adult males (Chaplin & Orlofsky, 1991) and a significant predictor of college student binge drinking and alcohol consumption (Lewis & Watts, 2004).

With regard to social bonding, alcohol consumption was a component of the delinquency variable constructed by Hirschi in his original study of juvenile participants (Hirschi, 1969). Hirschi defined delinquency as any behavior believed to be punishable if discovered, which included alcohol use. Subsequent empirical studies with populations beyond juveniles have provided support for the relationship between social bonding variables and alcohol consumption. Specifically, researchers have found significant relationships between some social bonding variables and college binge drinking (Durkin et al., 1999; Sun & Longazel, 2008) as well as drunk driving (Durkin et al., 2007).

Therefore, on these premises, the first research hypothesis was constructed to state that a significant portion of the variance in collegiate hazardous drinking would be

explained by both social interest and social bonding variables. Further, it was hypothesized that this explained variance would account for more of the variance than those demographic variables that have previously been found in the literature to predict alcohol abuse, including gender (Wechsler et al., 1997), Greek-life status (Barry, 2007), athletic Status (Theall et al., 2009), and age of first drink (Johnson et al., 2010). The results of the analysis supported this hypothesis in part. When compared to the four demographic variables (Gender, Greek-life Status, Athletic Status, and Age of First Drink), social interest did explain a significantly greater portion of the variance. This indicated that social interest had utility in explaining collegiate hazardous drinking above and beyond demographic variables only. The amount of variance explained by social interest above and beyond demographic variables in the current study (2.0%) is comparable to the amount of variance explained by social interest in similar studies, such as Lewis and Watts (2004) in which social interest explained 4.4% of the variance above and beyond Greek-life involvement and grade of first drink. However, in the current study, once the social bonding variables were entered into the regression, social interest no longer explained a significant portion of the variance. Instead, three social bonding variables (Religious Commitment, Conventional Beliefs, and Respect for Authority) and two demographic variables (Age of First Drink and Greek-life Status) significantly explained 21% of the variance of collegiate hazardous drinking.

When social bonding was added to the equation, the failure of social interest to contribute to the prediction equation was somewhat consistent with previous findings, which have been mixed. For example, although Lewis and Watts (2004) found social

interest to be a significant predictor of college student binge drinking, Lewis and Watcher (2006) did not find social interest to be lower among heavy drinkers when compared to non-heavy drinkers. Similarly, the current study indicated that social interest may have some utility in explaining collegiate hazardous drinking, yet only in part. Once social bonding variables were included, the utility of social interest in the explanation of variance was eliminated. A possible explanation may be that social bonding is mediating social interest, in that the construct of social bonding may serve to explain the relationship between social interest and hazardous drinking. For instance, an interest in the welfare of others may be a precursor for one's bond with society, which relates to choices pertaining to hazardous drinking. One may need a developed sense of interest in the welfare of others before he or she bonds with society through attachment, commitment, involvement, and belief. This has important implications for interventions, as it may be necessary to increase social interest in order to increase social bonding. Therefore, in light of the lack of significance of social interest upon entering the social bonding variables, the mediating relationship between the two constructs warrants further study.

Another possible explanation for the lack of significance of social interest after social bonding variables are entered into the regression pertains to the severity of the alcohol use. Adler (1964) described individuals struggling with alcoholism as failing in social interest. The measure used in the current study, however, identified students who were hazardous drinkers, a precursor to future diagnoses around substance abuse disorders (Saunders et al., 1993). Many hazardous drinkers do not currently have

substance abuse disorders, yet are at-risk for the development of alcoholism if hazardous drinking behaviors persist. Therefore, Adler's assertions around social interest and alcohol abuse may refer to individuals whose alcohol use has reached a higher level of severity and duration than those included in the current study. Consequently, the relationship between college alcohol use and social interest may be more complex than previously assumed.

The first hypothesis also was supported, in part, by the results pertaining to the social bonding variables. Religious Commitment, Conventional Beliefs, and Respect for Authority were found to significantly contribute to the regression explaining collegiate hazardous drinking. These results are similar to previous studies of social bonding and collegiate alcohol use. In a study of social bonding and binge drinking, Durkin et al. (1999) found that the belief element, including Respect for Authority and Conventional Belief variables, was the strongest predictor of binge drinking, although Religious Commitment, Commitment to Education, and Involvement also were found to be significant predictors. In addition, previous researchers (Durkin et al., 2007) found that Religious Commitment, Commitment to Higher Education, Respect for Authority, and Conventional Beliefs were significantly negatively correlated with drunk driving. Therefore, the belief element, including Conventional Beliefs and Respect for Authority, as well as the variable of Religious Commitment, have been significantly linked to both college binge drinking and drunk driving. The current study supports the significance of these three variables with regard to collegiate hazardous drinking.

It is unclear as to why the social bonding variables of Parental Attachment, Involvement, and Commitment to Higher Education were not significant in the explanation of collegiate hazardous drinking. One possible explanation is the developmental period of the sample. The transition to college is typically a time of differentiation from the family of origin and, therefore, attachment to parents may not be as important during this developmental stage. As only 17.7% of the sample reported living with their parents, the separation between the participant and her or his family residence may contribute to the lack of significance pertaining to the Parental Attachment variable. The fact that the Involvement and Commitment to Higher Education variables also failed to reach significance may be related to the social norms perspective of alcohol use. The culture of higher education institutions continues to include perceptions of heavy drinking (Polonec et al., 2006), which may be intertwined with one's commitment and involvement in higher education. For example, researchers have found that involvement in university athletics was associated with higher levels of binge drinking, while regularly attending events organized by the university correlated with lower levels of drinking and driving (Sun & Longazel, 2008). Therefore, more specificity regarding the type of involvement and aspects of higher education to which the student is committed, may serve to better explain the impact of these social bonding variables. It is possible that as students commit to their pursuit of higher education, as well as become involved in campus or employment activities, the opportunities to participate in alcohol-related behaviors may increase. Thus the college setting may serve to provide more exposure to alcohol-related behavior rather than control for hazardous drinking.

Therefore, the significance of Religious Commitment, Conventional Beliefs, and Respect for Authority appears to be a consistent theme in the study of collegiate alcohol-using behavior. The variables of Parental Attachment, Commitment to Higher Education, and Involvement, however, warrant further examination.

Social Interest, Social Bonding, and Marijuana Use

Similar to the literature describing alcohol use, the constructs of social interest and social bonding also have been linked both theoretically and empirically to drug use. Adler (1956) described individuals with drug addiction as possessing high levels of activity but low levels of social interest. Although their life situations require social interest, the lack of developing this innate potential leads these individuals to act in unsocial ways, such as escaping through drug use (Adler, 1956). While some empirical support exists to demonstrate the relationship between low levels of social interest and drug use (Colker & Slaymaker, 1984), contradictory findings also are present in the literature. Keen and Wheeler (1994) did not find a significant relationship between social interest and college students' use of substances such as tobacco, cocaine, marijuana, hallucinogens, and other narcotics. Thus, while the theoretical support exists for the associations between social interest and drug use, empirical findings are mixed.

Research findings on social bonding and marijuana use are somewhat more consistent as several researchers have discovered significant associations between social bonding and marijuana use. For example, Akers and Lee (1999) found a significant relationship between social bonding variables and adolescent marijuana use. Similarly, Marcos et al. (1986) found that social bonding variables accounted for a significant

portion of the variance in adolescent marijuana use and Seredycz and Meyer (2005) found a relationship between the social bonding elements of belief and involvement and collegiate drug use, including cannabis and stimulants. Therefore, the theoretical relationship between social bonding and drug abuse has garnered consistent empirical support.

The second hypothesis of the current study was constructed to further examine the relationships between social interest, social bonding, and collegiate marijuana use. The hypothesis stated that significant differences in social interest and social bonding would exist between groups of marijuana users ranging from those who do not use the substance to those who use it on a daily basis. The results supported this hypothesis as significant differences in social interest and social bonding existed between the five groups of marijuana users (nonusers, past users, occasional users, frequent users, and daily users). Specifically, the variables of Total Social Interest, Religious Commitment, Conventional Beliefs, and Respect for Authority significantly differed based on marijuana use category. Although social interest was not significant in explaining collegiate hazardous drinking when social bonding variables were included, groups of marijuana users did differ according to Total Social Interest score. This indicates that students engaging in various frequencies of marijuana use may have differences in their levels of social interest.

Further, the same three social bonding variables that significantly contributed to the explanation of collegiate hazardous drinking (Religious Commitment, Conventional Beliefs, and Respect for Authority) also were found to be significantly different between groups of marijuana users. In previous examinations of social bonding variables and drug

use, the belief element has been found to be a significant predictor (Akers & Lee, 1999; Marcos et al., 1986; Seredycz & Meyer, 1999); a finding that was replicated in the current study. In addition to the variables comprising the belief element (Conventional Beliefs and Respect for Authority), Religious Commitment also was found to differ between marijuana use categories in the current study. This finding is particularly meaningful as previous social bonding literature related to Religious Commitment offers mixed results. Some researchers have found Religious Commitment to be negatively correlated with acts of delinquency (Ryan et al., 2008), viewing pornography (Mesch, 2009), and adolescent drug use (Marcos et al., 1986), while another researcher did not find support for the relationship between Religious Commitment and adolescent violence (Cretacci, 2003). With regard to collegiate populations, results pertaining to Religious Commitment also are mixed. Brown et al. (2007) determined that undergraduate students with high levels of intrinsic religiousness consumed alcohol less frequently and at lower quantities, while Shinew and Perry (2005) did not find any significant differences in collegiate student drinking or drug use based on religious affiliations. Although contradictory findings exist in the literature, the results of this study suggest that one's commitment to a faith-based institution does impact collegiate hazardous drinking and marijuana use. Because of mixed findings in previous research, however, the variable of Religious Commitment warrants further examination in the study of college student substance use.

The second portion of research hypothesis two stated that lower marijuana using groups (nonusers) would have higher levels of social interest and social bonding than

higher marijuana using groups (past users, occasional users, frequent users, or daily users). The results of the analysis partially supported this hypothesis. Those participants who did not use marijuana had higher social bonding scores on Religious Commitment, Conventional Beliefs, and Respect for Authority than those who did use marijuana. Although Total Social Interest was significantly different between groups of marijuana users, none of the pairwise contrasts reached significance.

Social Interest, Social Bonding, and Substance Use Configurations

In an effort to examine both hazardous drinking and marijuana use simultaneously, the third research hypothesis was crafted to explore the relationship between social interest, social bonding and four groups of substance use configurations (those who are neither hazardous drinkers and do not use marijuana, hazardous drinkers only, marijuana users only, and those who engage in both). The results supported the hypothesis that significant mean differences in social interest and social bonding exist between these groups. As with the groups of marijuana users, the variables of Total Social Interest, Religious Commitment, Conventional Beliefs, and Respect for Authority contributed to the differences between the four groups of substance use configurations. These results indicate that social interest and three of the social bonding variables differ with regard to the configuration of substance use in which the college student is engaged.

The third hypothesis also stated that those who neither engage in hazardous drinking nor use marijuana (group 1) would have higher social interest and social bonding scores than the other three configuration groups (2, 3, and 4). The results supported this hypothesis for all four significant variables. Those participants who neither

engaged in hazardous drinking nor used marijuana (group 1) had higher Total Social Interest, Religious Commitment, Conventional Beliefs, and Respect for Authority than students who were both hazardous drinkers and used marijuana (group 4). Therefore, significant differences among these four variables existed between those who did not engage in substance abuse and those who engaged in dual substance abuse. No significant differences existed between those who neither engaged in hazardous drinking nor used marijuana (group 1) and those who were hazardous drinkers only (group 2) or marijuana users only (group 3), except in the case of Respect for Authority. Those who neither engaged in hazardous drinking nor used marijuana (group 1) also were significantly higher on Respect for Authority than those who used marijuana only (group 3). Those students who reported not engaging in hazardous drinking nor using marijuana were different than students who engaged in both substance abusing behaviors in terms of level of social interest, Religious Commitment, Conventional Beliefs, and Respect for Authority. These results indicate that social interest and the three significant social bonding variables may have particular utility in understanding students who choose to engage in substance abusing behaviors and those who do not.

Predicting Substance Use Configuration Group Membership

In light of the significant differences on social interest and several social bonding variables between substance use configuration groups, the fourth hypothesis was designed to examine whether the two constructs could successfully predict group membership. Specifically, the hypothesis stated that social interest and social bonding variables would significantly predict membership into groups of college students who do

not use marijuana and are not hazardous drinkers (group 1), those who are hazardous drinkers only (group 2), those who are marijuana users only (group 3), and those who do both (group 4). The results support this hypothesis as one function of the seven social interest and social bonding variables was found to significantly predict group membership. The function is defined most by the variables of Respect for Authority, Religious Commitment, and Conventional Beliefs. Therefore, considering these contributing variables, the function was labeled *Adherence to Authority*.

This function correctly predicted the group membership of 44.3% of the participants in the study with the highest number of accurately predicted cases belonging to the dual substance-abusing group (group 4) followed by the group of students who neither engage in hazardous drinking nor use marijuana (group 1). These results indicate that *Adherence to Authority* accurately predicted over 50% of the students who were classified into the substance use configuration group for those who engage in both hazardous drinking and marijuana use (group 4) and over 45% of those students who engage in neither hazardous drinking nor marijuana use (group 1). The utility of this function in predicting group membership could prove to be useful in informing interventions and preventative efforts pertaining to collegiate substance abuse. Specifically, it may be beneficial to provide an assessment for students entering college to determine attitudes and beliefs towards authority and conventional norms. Depending on the outcome of these assessments, prevention efforts and resources could be offered to students identified with low adherence to authority and thus at risk for hazardous drinking or marijuana use in college. These prevention efforts may include exploring

students' values (particularly around authority) as well as future goals. As values are identified, interventions can be utilized to highlight the relationship between values and goals. Students can be encouraged to determine whether their values, especially with regard to authority (i.e., low value on adhering to authority figures, high value on freedom and independence) impacts their goals (i.e., excel academically, secure a career in a field of interest). Students may benefit from cultivating congruence between their values and goals and integrating adherence to authority into their established value system as a mechanism for achieving those goals.

Limitations

The results of this study serve to illuminate the associations between social interest, social bonding, and collegiate substance use. It is important, however, that the findings be interpreted in view of the existing limitations. The first limitation pertains to the generalizability of the study results. The participants were students from one mid-sized University in the Southeast and thus results may not be generalizable to students in other geographic regions. Further, only full-time undergraduate students between the ages of 18 and 25 were included in this study. It is unknown to what extent these findings generalize to part-time students or those outside of the range of emerging adulthood. With regard to the sample, a small number of male participants (21%), freshmen (6%), athletes (3%), and those involved in Greek-life (12%) participated in the study. These groups may be underrepresented and this limitation should be considered when interpreting results.

A second limitation relates to the sampling method employed to collect the data. Purposeful sampling was utilized in order to obtain participants from two Departments within the University. Although a diverse number of academic disciplines were represented in the sample, the invitation to participate was made available only to students enrolled in one of the Counseling or Sociology courses visited by the student researcher. Further, within these groups of potential participants, the sample consisted only of students who volunteered to participate. It is unknown how non-participants may systematically differ from participants. For example, it may be possible that differences exist in the levels of social interest between those who elected to complete the survey and those who did not.

Third, the reliability of the instrumentation utilized in the study poses potential limitations. Two of the social bonding variable scales had only moderate internal reliability coefficients and thus the results must be interpreted with caution. The Conventional Belief scale had a Cronbach's alpha level of .60 and the Commitment to Higher Education scale had an alpha level of .73. Although these moderate scores do not preclude the variables from being used in the study, the low reliability should be taken into account when interpreting and applying the results. Finally, the data used in the study was obtained by self-report which has not been verified for accuracy. Although all survey packets remained anonymous, the sensitive nature of the items related to illegal drug use (underage drinking and marijuana use) may have had an impact on the participants' responses. Therefore, these results should be considered in light of the limitations of self-reported data.

Implications for Counselors

The results of the current study have several implications for counselors working with collegiate populations. The possible utility of a social interest and social bonding perspective from which to better understand college student hazardous drinking and marijuana use is an important finding. Many models exist to explain drug and alcohol abuse including biological, sociocultural, psychological, and biopsychosocial explanations. The inclusion of the internal characteristic of social interest and the external focus of social bonding may enhance the biopsychosocial perspective, which accounts for multiple aspects of both the individual and her or his environment, to understand substance abuse.

As social interest was found to differ significantly between groups of students engaged in various categories of marijuana use as well as substance use configurations, counselors working with collegiate populations may benefit from exploring and intervening in the area of social interest. Ansbacher (1968) summarized a three- step conceptual model describing how to increase levels of social interest, which may have particular pertinence to counselors with this aim. The first step of the model involves developing the aptitude for social living through training in the home, school, and community. Training in cooperation, by providing opportunities for clients to become interested in being socially useful, serves as a foundation for the development of social interest. For counselors working in college settings, this may entail assisting students in the identification of service learning projects, community service, or university teams or organizations in which clients can become involved in order to practice cooperation and

investing in others. The second step entails fostering specific abilities related to social interest such as empathizing, cooperating, communication skills, responsibility, and contributing to society. As clients develop these skills as a result of their training in cooperation and social living, their social interest levels may increase. Thus by incorporating strategies such as empathy building, social skill enhancement, and exploring clients' sense of responsibility, counselors may foster greater levels of social interest in their collegiate clients. Finally, the third step of the model consists of helping clients learn to evaluate decisions and behavioral choices in light of the impact on others. Thus, rather than considering decisions from only one perspective, clients may benefit from learning to evaluate their choices based on the perceived impact of those actions on others (Ansbacher, 1968). Counselors with the aim of increasing social interest can aid in the exploration of decision making and highlight the relationship between the clients' decisions and the impact of those decisions on significant others. Specifically, clients can be encouraged to examine their decision making process and identify points in which consideration of the welfare of others may enhance their decision making skills. Therefore, by employing the tenets of this model, counselors may serve to increase clients' levels of social interest, which has been found to differ between categories of marijuana use and substance use configurations.

In addition to addressing social interest levels, counselors working with collegiate populations may best serve their clients by considering their religious commitment, conventionality of beliefs, and respect for authority. Beyond the social norms perspective, which states that students are influenced by the perceived behavior of fellow students

(Felt et al., 2008; LaBrie et al., 2009; Lewis & Clemens, 2008), the results of this study introduce the importance of one's adherence to authority in their decisions around drug and alcohol use. Whether the authority stems from societal or religious positions, the results of the current analysis indicate that one's attitude toward the norms and expectations of those in authority are important factors in alcohol and marijuana using behaviors. This finding has implications for counselors working with college students who may benefit from formal or informal assessments of their beliefs pertaining to those in positions of authority. Understanding clients' respect for authority figures at the university level and society at large, coupled with the strength of clients' endorsement of conventional beliefs, may be important components of counselors' case conceptualizations. Furthermore, utilizing conceptualizations that include these variables in goal setting and treatment planning may play an important role in clinical work with collegiate substance abuse. For example, understanding a client's history related to authority figures may be beneficial in uncovering the development of the client's views related to authority. Counselors may choose to explore the impact of these views on the client's decisions and behaviors, as well as identify any mistake beliefs related to adhering to authority. Further, clients' moral development and identified values may be important considerations for counselors seeking to understand and intervene in the area of social bonding, particularly related to conventional beliefs and respect for authority.

In addition, as religious commitment appears to partially explain collegiate hazardous drinking, differentiate between groups of students engaged in various substance use configurations, and predict group membership in the substance use

configuration groups, counselors may best serve clients by working with spiritual and religious issues in counseling. According to Fowler's (1981) Stages of Faith model, traditional-aged college students are typically in the Individuative-Reflective stage of faith development with the task of creating a personal belief system. This stage is characterized by distancing oneself from previous assumptions pertaining to a faith-based belief system and embracing the responsibility of adopting an individually significant faith (Fowler, 1981). Thus, as religious commitment was found to play an important role in collegiate substance abuse, counselors working with college students have the opportunity to help clients navigate through this stage of faith development in light of goals to address substance abusing behavior. For those clients who do not adhere to a particular religion, counselors can work to explore aspects of spirituality. According to recent models of wellness, spirituality includes one's sense of meaning and purpose in life (Myers & Sweeney, 2004). Thus counselors can engage in explorations of faith development, as well as a client's sense of purpose, in order to understand decisions related to drug and alcohol use. Recent literature, however, supports the notion that although counselors deem addressing spiritual and religious issues in counseling as important, the reported frequencies of utilizing such behaviors are lower than their importance ratings would suggest (Cashwell et al., *in press*). Although reasons for this discrepancy between importance and frequency ratings are unclear, counselors may benefit from training in the incorporation of religious or spiritual assessment, intervention, and exploration into their clinical work. Understanding and implementing the spiritual competencies developed by the Association for Spiritual, Ethical and

Religious Values in Counseling (ASERVIC) also may assist in augmenting counselor confidence in addressing spiritual and religious issues with their clients (Cashwell & Watts, 2010). Therefore, it may be in the best interest of counselors in collegiate settings to explore religious and spiritual issues with their clients as a means to better understand decisions pertaining to drug and alcohol abuse.

Implications for Counselor Educators

The vision statement of the Council for Accreditation of Counseling and Related Educational Programs (CACREP) describes the goal of this accrediting body as promoting the improvement of counseling training programs as well as preparing counselors to provide the services necessary for optimal development (www.cacrep.org). Universities with CACREP accredited counseling programs may benefit from the infusion of both social interest and social bonding throughout the counseling curriculum to better meet and fulfill this vision. Counselor training programs can be improved by providing students with a more thorough understanding of social interest, as well as knowledge pertaining to sociological constructs such as social bonding, in that both theory and research support the impact of these constructs on optimal human development.

Although traditionally mentioned when addressing Adlerian counseling in core courses related to counseling theories, the current study specifically supports the utility of incorporating social interest into courses designed to train counselors to work in college counseling settings as well as with substance abuse issues. Counselor educators have the opportunity to bridge the gap between conceptual knowledge and clinical practice by not

only describing constructs such as social interest from a theoretical perspective, but also by providing empirical evidence for the association between the construct and client presenting concerns. The results of the current study provide one example of how social interest can be practically applied to work with college students and substance-abusing behaviors. By integrating this knowledge into counseling courses, beyond brief introductions to key theoretical concepts, the bridge between knowledge and clinical practice may be strengthened. Therefore, the results of this study have implications for educators in counselor training programs as they determine how to meaningfully infuse important theoretical constructs, such as social interest, into multiple courses.

Social bonding is historically not taught in the counseling curriculum, although the theoretical and empirical support for the construct has considerable implications for many courses in counselor training programs. Specifically, the results of the current study suggest that the infusion of social bonding into courses related to college counseling, addictions counseling, and spirituality issues in counseling, may provide important knowledge for counselors-in-training. Although important differences exist between the fields of sociology and counseling, the integration of concepts from each discipline, such as social interest and social bonding, may serve to enhance the competency of those aspiring to work in the helping profession.

For example, the counseling field is built upon the foundation of wellness, in which clients are conceptualized holistically. Specifically, the Indivisible Self model suggests that the overall wellness of an individual is impacted by an improvement in any second-order factor of wellness including Essential Self, Social Self, Coping Self,

Creative Self, and Physical Self (Myers & Sweeney, 2004). It is clear that these second-order factors relate to social interest as the model was built upon the foundation of Adlerian constructs and the components of friendship and love comprise the Social Self. Additionally, many factors in the model relate to the construct of social bonding as well. For example, spirituality is a component of the Essential Self which relates the social bonding variable of Religious Commitment. Work, leisure, and self-care are features of the Creative Self, Coping Self, and Essential Self, respectively, which relate to the social bonding element of Involvement. Control is a component of Creative Self and realistic beliefs is a component of Coping Self, both of which relate to the social bonding element of Belief. Finally, the friendship and love components of the Social Self also relate to the social bonding element of Attachment. In light of the premise that enhancing one area of wellness will serve to increase the overall wellbeing of the individual, addressing social bonding elements may support the wellness perspective of the counseling profession. Thus, as counselor educators seek to expose counselors-in-training to models of wellness, the integration of the sociological construct of social bonding and counseling construct of social interest may assist in fulfilling this goal.

Therefore, by integrating sociological constructs into the counseling curriculum, counselors-in-training may gain the ability to conceptualize future clients more holistically and feel competent in addressing both internal and external factors. Due to the clinical relevance of both social interest and social bonding, specifically with college student populations and in the area of substance abuse counseling, the infusion of these

constructs across a variety of counseling courses may enhance efforts to meet CACREP preparation standards.

Implications for Future Research

The results of the current study provide direction for future research endeavors to better understand the constructs of social interest and social bonding, and apply this understanding to a variety of populations and clinical interventions. With regard to specific populations to be studied, future research projects need to include larger representations of the groups that were underrepresented in the current study. Specifically, studies are needed that address social interest and social bonding with larger samples of collegiate males, athletes, those involved in Greek-life, and underclassmen. Additionally, future studies involving students outside the age-range of emerging adulthood (18-25) or with part-time enrollment status, may provide additional information related to social interest, social bonding, and collegiate substance abuse. Rather than addressing only hazardous drinking and marijuana use, future research is needed to include additional substances, such as cocaine, heroin, and other narcotics used by college students, as well as examine those involved in more severe alcohol abusing behaviors, such as students who meet diagnostic criteria for alcohol dependence.

In light of the drug and alcohol culture of college settings and the presence of strong social norms related to substance abuse, studies examining the relationship between social interest and social bonding with samples of individuals who are not currently attending college would illuminate additional aspects of these associations. By expanding the current study to include non-collegiate adults in treatment for substance

use disorders, the impact of social interest and social bonding on substance use could be better understood.

Additionally, the measurement of social interest could be adapted in future studies to enhance the literature. The various self-report measures available to assess social interest pose challenges to researchers (Bass et al., 2002). Thus, several researchers have constructed studies with alternative methods for observing social interest levels, including the use of facial expression slides (McCown et al., 1988) and double-aspect stimuli (Huber & Coleman, 1986). Future studies utilizing alternative techniques for examining social interest levels may secure data from those who would not select to complete a self-report survey, provide evidence beyond self-report, and thus contribute to this field of research.

Other directions for future research include further examination of the significant social bonding variables related to collegiate hazardous drinking and marijuana use, including religious commitment, conventionality of beliefs, and respect for authority. For example, researchers might further explore what aspects of religious commitment are associated with choices pertaining to substance abuse. Specifically, researchers could consider extrinsic versus intrinsic religiosity, level of religious or spiritual participation, and the potential for spiritual bypass (Clarke, Giordano, Cashwell, & Lewis, *in press*) to better understand the religious and spiritual lives of student with higher levels of substance use. It is important to further understand the nuances of religiosity as it could potentially influence alcohol and drug use by providing accountability and support through a faith-based community, contributing to the development of healthy coping

strategies, or, alternatively, fostering a sense of guilt and shame in students, which might increase substance use. Additionally, the effects of the Conventional Beliefs and Respect for Authority variables warrant further examination. Researchers would contribute significantly to this field by exploring how such beliefs form. By obtaining additional information about these variables, researchers may assist in the development of effective interventions to strengthen these elements in students at-risk for substance abuse in college. Finally, longitudinal studies assessing the drug and alcohol use of college students who engage in clinical interventions designed to increase social interest and strengthen social bonding elements may serve to provide information related to the efficacy of such efforts.

Conclusions

The purpose of this study was to explore the relationship between social interest, social bonding and collegiate hazardous drinking and marijuana use. A review of relevant literature revealed both theoretical and empirical works linking both social interest and social bonding to substance abuse, but social interest and social bonding have never been examined together. The current study brought the two constructs together in an effort to explore both internal (social interest) and external (social bonding) characteristics as a way to more holistically understand collegiate substance abuse. The results of the study support the notion that social interest and social bonding are related to collegiate hazardous drinking and marijuana use. Specifically, both social interest and social bonding variables differed between groups of marijuana users as well as substance abuse configurations. Additionally, the two constructs were found to be significantly, yet

moderately, related to one another, thereby providing empirical support for the relationship between social interest and social bonding, though it appears to remain clear that the two are distinct constructs.

These results have implications for counselors, counselor educators, and future research. Counselors working with collegiate populations may benefit by addressing social interest and social bonding elements with their clients through assessments and interventions, as well as incorporating these constructs into their conceptualizations and treatment plans. The development of interventions designed to increase social interest and strengthen social bonding variables may positively impact college students at-risk for substance abuse. Counselor educators may best serve counselors-in-training by infusing the constructs of social interest and social bonding into course curriculum. By exploring the utility of addressing social interest and social bonding in practice, counselor educators can bridge the gap between conceptual knowledge and clinical application. Further, the exploration of the sociological construct of social bonding in a counseling training program supports the holistic, wellness perspective of the counseling field by addressing multiple layers of the human experience, including external factors such as the four social bonding elements. The implications for future research include examining social interest and social bonding with a variety of populations including underrepresented collegiate groups as well as those in substance abuse treatment programs. Additionally, researchers can contribute to the literature by exploring each of the significant social interest and social bonding variables that contributed to differences between groups of college students engaged in various configurations of substance abusing behavior. This

information can be used to inform future interventions and provide insight into identifying and providing treatment for students at-risk for collegiate substance abuse.

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APPENDIX A

INFORMED CONSENT

UNIVERSITY OF NORTH CAROLINA AT GREENSBORO

Project Title: Social interest and social bonding: Understanding collegiate hazardous drinking and marijuana use.

Project Director: Dr. Craig Cashwell

What is the study about?

This is a research project. You are being asked if you want to be in the research study being conducted by Amanda Giordano and Dr. Craig Cashwell, a student and faculty member at UNCG. We are trying to find out about the relationship between a college student's view of others and society and her or his actions related to alcohol and marijuana use. The purpose of this study is to help us better understand contributing factors to college student drinking and marijuana use.

Why are you asking me?

You have been picked for this study because you are an undergraduate student at UNCG.

What will you ask me to do if I agree to be in the study?

If you agree to participate, Amanda Giordano, a UNCG student researcher, will provide you with a survey packet containing 100 items. It should take you no longer than 20 minutes to complete the survey packet and you will be provided follow-up information about the study once you are finished. The survey packet contains questions related to characteristics about yourself, your view of others and society, as well as alcohol and marijuana using behaviors.

Is there any audio/video recording?

There are no audio/video recordings in this research study.

What are the dangers to me?

The Institutional Review Board at the University of North Carolina at Greensboro has determined that participation in this study poses minimal risk to participants. The risks involved in this study include the possibility of experiencing negative emotions. Thinking about alcohol or drug use may bring up some thoughts or feelings you would like to talk about with a counselor. If so, you may contact the Vacc Counseling and Consulting Clinic at 336-334-5112 or Counseling and Testing Center at 336-334-5340 to schedule an appointment. If you have any concerns about your rights, how you are being treated or if you have questions, want more information or have suggestions, please contact Eric Allen in the Office of Research Compliance at UNCG toll-free at (855)-251-2351. Questions, concerns or complaints about this project or benefits or risks associated with being in this study can be answered by Dr. Craig Cashwell who may be contacted at (336) 334-3427 or ccashwe@uncg.edu

Are there any benefits to society as a result of me taking part in this research?

The benefits to society from your participation in this study include helping to inform researchers about the college student experience. The results of this study may be helpful to the counseling profession as well as college program leaders and staff who desire to learn more about college

UNCG IRB
Approved Consent Form
Valid 10/4/11 to 10/2/12

student substance use.

Are there any benefits to *me* for taking part in this research study?

There are no direct benefits to participants in this study.

Will I get paid for being in the study? Will it cost me anything?

There are no costs to you or payments made for participating in this study. At the conclusion of your survey is a separate page on which you can provide your contact information for a drawing for 5 (five) \$20 Target Gift Cards. If you would like to be considered for the drawing, please complete the last page of the survey, detach it from your survey and submit this page. At no point will your contact information be connected to your responses on the survey.

How will you keep my information confidential?

Your information will be kept confidential by the use of confidential data collection procedures. Your privacy will be protected by the use of only ID numbers rather than names or identifying information on the survey documents. Although some survey questions relate to drug and alcohol use, the information you provide will not be linked to you in any way. All information obtained in this study is strictly confidential unless disclosure is required by law.

For Internet Research, include this wording: N/A There is no Internet Research in this study.

What if I want to leave the study?

You have the right to refuse to participate or to withdraw at any time, without penalty. If you do withdraw, it will not affect you in any way. If you choose to withdraw, you may request that any of your data which has been collected be destroyed unless it is in a de-identifiable state.

What about new information/changes in the study?

If significant new information relating to the study becomes available which may relate to your willingness to continue to participate, this information will be provided to you.

Voluntary Consent by Participant:

By voluntarily participating in this study you are agreeing that you have read this consent form, or it has been read to you, and you fully understand the contents of this document, are openly willing to take part in this study, and all of your questions concerning this study have been answered. By participating in this study, you are agreeing that you are 18 years of age or older and are agreeing to participate voluntarily in this study described to you by Amanda Giordano.

UNCG IRB
Approved Consent Form
Valid 10/7/11 to 10/2/12

APPENDIX B

HIRSCHI'S SOCIAL BONDING QUESTIONNAIRE—ADAPTED

First, we would like to learn more about your attitudes related to your family, school, religion, work, and the law. Please indicate whether you strongly agree, somewhat agree, slightly agree, slightly disagree, somewhat disagree, or strongly disagree with the following statements by circling the answer that fits best for you. There are no right or wrong answers.						
My parents want to help me when I have a problem	Strongly Agree	Somewhat Agree	Slightly Agree	Slightly Disagree	Somewhat Disagree	Strongly Disagree
My parents and I can talk about future plans	Strongly Agree	Somewhat Agree	Slightly Agree	Slightly Disagree	Somewhat Disagree	Strongly Disagree
I can share my thoughts and feelings with my parents	Strongly Agree	Somewhat Agree	Slightly Agree	Slightly Disagree	Somewhat Disagree	Strongly Disagree
I have a lot of respect for my parents	Strongly Agree	Somewhat Agree	Slightly Agree	Slightly Disagree	Somewhat Disagree	Strongly Disagree
I would like to be the kind of person that my parents are	Strongly Agree	Somewhat Agree	Slightly Agree	Slightly Disagree	Somewhat Disagree	Strongly Disagree
One of the worst things that could happen to me is letting my parents down	Strongly Agree	Somewhat Agree	Slightly Agree	Slightly Disagree	Somewhat Disagree	Strongly Disagree
Regular attendance in a religious organization is important to me	Strongly Agree	Somewhat Agree	Slightly Agree	Slightly Disagree	Somewhat Disagree	Strongly Disagree
The things I do when I'm at religious services seem worthwhile and important to me	Strongly Agree	Somewhat Agree	Slightly Agree	Slightly Disagree	Somewhat Disagree	Strongly Disagree
Religion and religious teachings have a great deal of influence on how I lead my life	Strongly Agree	Somewhat Agree	Slightly Agree	Slightly Disagree	Somewhat Disagree	Strongly Disagree
Prayer is an important part of my daily life	Strongly Agree	Somewhat Agree	Slightly Agree	Slightly Disagree	Somewhat Disagree	Strongly Disagree
I try hard in school	Strongly Agree	Somewhat Agree	Slightly Agree	Slightly Disagree	Somewhat Disagree	Strongly Disagree

<p>First, we would like to learn more about your attitudes related to your family, school, religion, work, and the law. Please indicate whether you strongly agree, somewhat agree, slightly agree, slightly disagree, somewhat disagree, or strongly disagree with the following statements by circling the answer that fits best for you. There are no right or wrong answers.</p>						
Getting good grades is important to me	Strongly Agree	Somewhat Agree	Slightly Agree	Slightly Disagree	Somewhat Disagree	Strongly Disagree
Regular class attendance is important to me	Strongly Agree	Somewhat Agree	Slightly Agree	Slightly Disagree	Somewhat Disagree	Strongly Disagree
I honestly believe I will earn a college degree	Strongly Agree	Somewhat Agree	Slightly Agree	Slightly Disagree	Somewhat Disagree	Strongly Disagree
To get ahead you have to do some things which aren't right	Strongly Agree	Somewhat Agree	Slightly Agree	Slightly Disagree	Somewhat Disagree	Strongly Disagree
When I do something wrong, I usually feel guilty about it	Strongly Agree	Somewhat Agree	Slightly Agree	Slightly Disagree	Somewhat Disagree	Strongly Disagree
It is okay to break the rules if you can get away with it	Strongly Agree	Somewhat Agree	Slightly Agree	Slightly Disagree	Somewhat Disagree	Strongly Disagree
I have a lot of respect for the local police	Strongly Agree	Somewhat Agree	Slightly Agree	Slightly Disagree	Somewhat Disagree	Strongly Disagree
I have a lot of respect for the campus police	Strongly Agree	Somewhat Agree	Slightly Agree	Slightly Disagree	Somewhat Disagree	Strongly Disagree
It is important to comply with those in positions of authority	Strongly Agree	Somewhat Agree	Slightly Agree	Slightly Disagree	Somewhat Disagree	Strongly Disagree
What is your Grade Point Average (GPA)?	Less than 1.5	1.6-2.0	2.1-2.5	2.6-3.0	3.1-3.5	3.6 or above
In a typical week during the semester, how many hours do you spend studying or working on class assignments?	None	1 to 5 hours	6 to 10 hours	11 to 15 hours	16 to 20 hours	More than 20 hours
In a typical week during the semester, how many hours do you spend working at a job?	None	1 to 5 hours	6 to 10 hours	11 to 15 hours	16 to 20 hours	More than 20 hours

First, we would like to learn more about your attitudes related to your family, school, religion, work, and the law. Please indicate whether you strongly agree, somewhat agree, slightly agree, slightly disagree, somewhat disagree, or strongly disagree with the following statements by circling the answer that fits best for you. There are no right or wrong answers.

<p>In a typical week during the semester, how many hours do you spend participating in extracurricular activities such as athletics, campus clubs, student government, band, etc?</p>	None	1 to 5 hours	6 to 10 hours	11 to 15 hours	16 to 20 hours	More than 20 hours
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APPENDIX C

AUDIT AND MARIJUANA INDEX

Next we would like to learn more about your behavior related to alcohol and marijuana. Please read each statement carefully and circle the answer in the box that fits best for you.						
How often do you have one drink containing alcohol?	Never	Monthly or less	2-4 times a month	2-3 times a week	4 or more times a week	
How many drinks containing alcohol do you have on a typical day when you are drinking?	1 or 2	3 or 4	5 or 6	7 to 9	10 or more	
How often do you have four or more drinks on one occasion?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
How often during the last year have you found that you were not able to stop drinking once you had started?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
How often during the last year have you failed to do what was normally expected from you because of drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
How often during the last year have you had a feeling of guilt or remorse after drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
How often during the last year have you been unable to remember what happened the night before because you had been drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	

Next we would like to learn more about your behavior related to alcohol and marijuana. Please read each statement carefully and circle the answer in the box that fits best for you.						
Have you or someone else been injured as a result of your drinking?	No		Yes, but not in the last year		Yes, during the last year	
Has a relative or friend or doctor or other health worker been concerned about your drinking or suggested you cut down?	No		Yes, but not in the last year		Yes, during the last year	
How old were you when you first drank alcohol? (please write age in the box to the right)						
In the past year, how often have you ingested any form of marijuana?	None	Less than 1 time per week	1-5 times per week	At least 1 time most days		
In your lifetime, have you ever ingested any form of marijuana?	No	Yes				
If you have ingested marijuana, how old were you when you first used? (please write age in the box to the right)						

APPENDIX D
DEMOGRAPHICS QUESTIONNAIRE

Now we would like to find out more about the students who complete this survey. Please answer the following questions:

What is your age? _____

What year are you in school? (please circle one)

1. Freshman
2. Sophomore
3. Junior
4. Senior
5. Other _____

How many credit hours are you currently enrolled in this semester?

What is your college major? _____

What do you consider to be your primary racial group? (please circle one)

1. Asian
2. Black/African American
3. Latino(a)/Hispanic
4. Native American
5. White/Caucasian
6. Other _____

What is your gender? (please circle one)

1. Male
2. Female

Are you part of a university sponsored athletic team? (please circle one)

1. No
2. Yes

Are you part of a sorority or fraternity? (please circle one)

1. No
2. Yes

Which of the following academic disciplinary consequences have you experienced as a result of drug/alcohol use? (please circle all that apply)

1. Suspension
2. Expulsion
3. Loss of privileges to attend school/college events
4. Mandatory alcohol or drug education or counseling
5. Prohibited from living in a dorm
6. Meeting with Dean of Students or principal
7. None

If you circled any of the above, how old were you the first time you had academic disciplinary consequences as a result of drug/alcohol use? _____

APPENDIX E
PILOT STUDY RESULTS

Participants in the pilot study included 15 college students in a small counseling course. All students in the course elected to participate. Three of the students did not meet inclusion criteria (age and enrollment status) and were not included in the pilot study analysis. The complete demographic data of the sample is detailed in Table 19.

Table 19
Demographic Data of Pilot Study Sample (N=12)

Variable	<i>M/SD</i>	<i>n</i>	%
AGE	<i>M</i> =21.58, <i>SD</i> =1.78		
YEAR			
Sophomore		3	25.0
Junior		2	16.7
Senior		7	58.3
RACE			
Asian		1	8.3
Black/African American		6	50.0
Latino/Hispanic		1	8.3
White/Caucasian		4	33.3
GENDER			
Female		8	66.7
Male		4	33.3

Table 19 (cont.)

Variable	<i>M/SD</i>	<i>n</i>	%
ATHLETE			
No		12	100.0
GREEK			
No		9	75.0
Yes		3	25.0
RELIGION			
Christian		10	83.3
Spiritual but not Religious		1	8.3
Other		1	8.3
REL. IMPORTANCE*	<i>M= 3.33, SD= .98</i>		
SPIRIT. IMPORTANCE*	<i>M= 3.83, SD= 1.03</i>		
RESIDENCE			
Dorm		4	33.3
Greek house		1	8.3
Parent/family house		1	8.3
Apartment off-campus		6	50.0

Note: *Religious and spiritual importance were reported on 5-point scale

As depicted in Table 19, the majority of participants were female ($n = 8$, 66.7%), in their senior year of college ($n = 7$, 58.7%), and African American ($n = 6$, 50%). There were no student athletes in the sample and 25% ($n = 3$) were involved in a fraternity or sorority. The majority of the sample identified as Christian ($n = 10$, 83.3%) with a mean religious importance rating of 3.33 (on a 5-point scale) and a mean spiritual importance rating of 3.83 (on a 5-point scale). Finally, half of the participants reported living in an

off campus apartment ($n = 6$, 50%). Each participant completed the survey packet comprised of the SSSI, Hirschi's Social Bonding Questionnaire—Adapted, AUDIT, Marijuana Use Index, and demographics questionnaire, totaling 99 items. Cronbach's alpha levels for the total AUDIT and social bonding variables were above the recommended .70 level for internal consistency for social science research (Heppner & Heppner, 2004). The Kuder-Richardson 20 (KR20) coefficient for the total SSSI was used as the data was dichotomous. This coefficient was also above the recommended .70. The mean social interest score for the sample was 38.33 ($SD = 5.80$) and mean AUDIT score was 5.67 ($SD = 4.87$). The complete descriptive statistics of the instruments are provided in Table 20.

Table 20
Descriptive Statistics for Pilot Study Instruments

Instrument/Subscale	<i>M</i>	<i>SD</i>	α	# of Items
Total SSSI	38.33	5.80	.79 (KR20)*	50
SSSI-1	10.58	2.71		
SSSI-2	15.75	3.13		
Parental Attachment	31.25	5.12	.86	6
Religious Commitment	16.58	4.85	.80	4
Commitment to Edu	25.83	2.92	.71	5
Involvement	8.33	2.99		3
Respect for Authority	8.33	2.67	.84	2
Conventional Beliefs	13.50	3.32	.71	3
AUDIT	5.67	4.87	.88	10
Marijuana Index	1.92	1.16		1

Note: The Kuder-Richardson 20 coefficient was calculated for the total SSSI as the data is dichotomous.

The first research hypothesis, that a statistically significant portion of variance in college student self-reported hazardous drinking behavior was explained by social interest and the six social bonding variables, was addressed using a multiple regression analysis. The full results of the analysis are reported in Table 21. The results of the regression were not significant and thus indicate that the seven predictors of social interest and social bonding do not significantly explain the variance of hazardous drinking behavior ($R^2 = .68$, $F(7, 4) = 1.20$, $p < .05$). Although R^2 is high (.68), it is non-significant because of sample size.

Table 21

Pilot Study Hazardous Drinking Behavior Explained by Social Interest and Social Bonding

Variable	<i>B</i>	<i>SE B</i>	<i>β</i>
Total SSSI	-.17	.42	-.20
Parental Attachment	.01	.70	.01
Religious Commitment	.82	.43	.81
Commitment to Edu	1.48	1.33	.89
Involvement	.64	1.22	.39
Conventional Beliefs	-1.39	.95	-.95
Respect for Authority	-1.44	1.36	-.79
R^2		.68	
F		1.20	

To address the second research hypothesis, that significant mean differences in social interest and the six social bonding variables exist between groups of marijuana

users including nonusers, past users, occasional users, frequent users, and daily users and specifically, lower marijuana using groups will have higher mean scores on social interest and social bonding when compared to higher marijuana using groups, a MANOVA was conducted (see Table 22). Due to the small sample size, the assumptions necessary to conduct the analyses were not met. As expected, the results for the multivariate analysis were not significant at the .05 level ($\Lambda=.03$, $F(21, 6.29) = .77$) and the hypothesis was not supported. Thus in the pilot study analysis, no significant differences in social interest and social bonding variables existed between groups of marijuana use.

Table 22

Social Interest and Social Bonding Group Differences among Marijuana Use Categories in Pilot Study

Variable	Λ	F	df ₁	df ₂	<i>p</i>
Marijuana Use	.03	.77	21	6.24	.70

Although the multivariate results were not significant, the between-subjects effects were assessed to confirm that there were no significant findings. As expected, there were no significant variables at the .05 level (see Table 23).

Table 23

Between Subjects Effects of Predictor Variables on Marijuana Use in Pilot Study

Variable	<i>F</i>	<i>p</i>
Total SSSI	1.27	.35
Parental Attachment	.23	.87
Religious Commitment	.31	.82

Table 23 (cont.)

Variable	<i>F</i>	<i>p</i>
Commitment Edu	.40	.76
Involvement	1.99	.19
Conventional Beliefs	3.48	.07
Respect for Authority	.51	.69

To address research hypothesis three, that significant mean differences in social interest and the six social bonding variables exist between groups of college students who (a) do not use marijuana and are not hazardous drinkers, (b) do not use marijuana and are hazardous drinkers, (c) use marijuana and are not hazardous drinkers, and (d) use marijuana and are hazardous drinkers, and specifically, those who do not engage in hazardous drinking or marijuana use will have higher mean scores of social interest and stronger social bonding scores than those who engage in hazardous drinking, use marijuana, or both, a MANOVA was also conducted (see Table 24). As with hypothesis two, the small sample size prohibited assumptions necessary to conduct the analyses from being met. The results for the multivariate analysis were not significant at the .05 level ($\Lambda=.01$, $F(21, 6.29) = 1.09$) and the hypothesis was not supported. Therefore, there were no significant differences in social interest or social bonding variables among college students engaging in hazardous drinking, marijuana use, neither, or both.

Table 24**Social Interest and Social Bonding Group Differences among Substance Abuse Configurations in Pilot Study**

Variable	Λ	F	df₁	df₂	<i>p</i>
Substance Use	.01	1.09	21	6.29	.49

Although the multivariate results were not significant, the between-subjects effects were assessed to confirm that there were no significant findings (Table 25). There were no significant variables at the .05 level except for parental attachment ($p = .04$). The lack of significant finds may be explained by the low sample size and insufficient number of participants per group.

Table 25**Between Subjects Effects of Predictor Variables on Substance Abuse in Pilot Study**

Variable	F	<i>p</i>
Total SSSI	.57	.65
Parental Attachment	4.32	.04
Religious Commitment	1.06	.42
Commitment Edu	3.66	.06
Involvement	2.21	.20
Conventional Beliefs	1.94	.20
Respect for Authority	.71	.57

Hypothesis four, which states that social interest and the six social bonding variables will significantly predict group membership in the following four groups of

college students: (a) those who do not use marijuana and are not hazardous drinkers, (b) those who do not use marijuana and are hazardous drinkers, (c) those who use marijuana and are not hazardous drinkers, and (d) those who use marijuana and are hazardous drinkers, was addressed using a discriminant function analysis (see Table 26). Contrary to the hypothesis, but as anticipated with the small sample size, there were no significant functions predicting group membership. The first function accounted for 81.2% of the variance, yet was not significant at the .05 level ($p = .28$).

Table 26

Discriminant Function Analysis of Substance Abuse Configurations in Pilot Study

Function	Eigenvalue	% of Variance	Canonical Correlation	Λ	df	p
1	13.33	81.2	.96	.01	21	.28
2	2.37	14.5	.84	.17	12	.65
3	.71	4.3	.64	.59	5	.71

Although no function was found to be significant at the .05 level, the standardized canonical discriminant function coefficients were assessed to determine the individual contributions of the variables to each function (see Table 27). The first function was defined most by parental attachment, involvement, and religious commitment. The second function was defined most low parental attachment, social interest, and commitment to higher education. The third function was defined most by acceptance of conventional beliefs, respect for authority, and low religious commitment. Due to the

lack of significance of the functions, further analysis as to the variables most important for discriminating between the four groups of substance abuse was not conducted.

Table 27

Standardized Canonical Discriminant Function Coefficients in Pilot Study

Variable	Function 1	Function 2	Function 3
Total SSSI	-1.28	.59	-.03
Parental Attachment	2.54	-.93	.29
Religious Commitment	1.90	.25	-1.16
Commitment Edu	1.35	.53	-.82
Involvement	2.24	-.14	.15
Conventional Beliefs	-.35	.35	1.57
Respect for Authority	-.14	-.46	1.49

The final hypothesis, which states that the total scale and two subscales of social interest and six social bonding variables was positively, significantly correlated, but only moderately, was addressed using a correlation matrix (see Table 28). There were significant, positive correlations between the Total SSSI score and the SSSI subscale ($r = .84, p < .01$) as well as between commitment to education and respect for authority ($r = .61, p < .05$). Contrary to the hypothesis, no correlations between social interest scores and social bonding variables were significantly, positively, correlated. In addition, the two social bonding variables *parental attachment* and *involvement*, were significantly, negatively correlated in this sample ($r = -.65, p < .05$).

Table 28**Correlation Matrix of SSSI and Social Bonding Variables in Pilot Study**

	Total SSSI	SSSI-1	SSSI-2	Att.	Rel. Com	Com. Edu	Involv.	Conv. Belief	Resp. Auth.
Total SSSI	1								
SSSI-1	.84**	1							
SSSI-2	.30	.09	1						
Attachment	.21	-.10	-.04	1					
Religious Commitment	-.59	.17	-.40	-.39	1				
Commitment Education	.36	.20	.34	.31	-.27	1			
Involvement	.34	.51	.23	-.65*	.21	.24	1		
Conventional Beliefs	.09	.50	-.08	-.25	.48	.09	.27	1	
Respect for Authority	.35	-.10	.39	.28	-.23	.61*	-.02	-.48	1

** $p < .01$ (2-tailed); * $p < .05$ (2-tailed)