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Changes in College Students' Readiness to Change Scores Following a Substance Abuse Assessment-Interview With a Counselor-in-Training

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Abstract

Through use of the Stages of Change Readiness and Treatment Eagerness Scales (SOCRATES), this study measured the impact of a comprehensive substance abuse assessment in 25 clients on three measures: problem recognition, ambivalence, and taking steps. Each assessment was administered by a counselor-in-training located in a college counseling training clinic. Results from two years of data showed a significant decrease in ambivalence and problem recognition measures following the assessment experience. Research indicates that lowered ambivalence and lowered problem recognition are both related to lowered problems in use in the future. Given the extent of problems with substance abuse with college students, this type of interview may contribute to a reduction of future use. Narrative feedback indicated that the counseling relationship was a positive part of the assessment experience. Further investigations to enhance significance of the findings are discussed.

The heavy use of alcohol continues to be a major public health problem among college students (Nelson, Xuan, Lee, Weitzman, & Wechsler, 2009). Alcohol abuse can contribute to negative consequences such as educational and relational difficulties, legal charges, overdoses, antisocial activities, high-risk sexual behaviors, memory impairment,

suicide, and even death (Beck et al., 2010; Gruenewald, Johnson, Light, & Saltz, 2003; Molnar, Busseri, Perrier, & Sadava, 2009; Parada et al., 2011; Schaffer, Jeglic, & Stanley, 2008; Singleton & Wolfson, 2009; Wechsler, Lee, Kuo, & Lee, 2000).

Reasons why college students use and abuse alcohol are diverse such as seeking sensation, having limited parental or religious connections, and using alcohol consistently before entrance to college (Borsari, Murphy, & Barnett, 2007; Hingson, Assailly, & Williams, 2004; Hingson, Heeren, & Edwards, 2008). Students can be vulnerable once they arrive to college, and they may use more alcohol due to poor coping, high stress, beliefs that alcohol use enhances social skills, depression, low self-regulation, peer influence, turning age 21, and fraternity/sorority membership (Beck et al., 2010; Borsari et al., 2007; Bujarski, Klanecky, & McChargue, 2010; Hustad, Carey, Carey, & Maisto, 2009; Leeman, Feeton, & Volpicelli, 2007; Mallett, Bachrach, & Turrisi, 2009; Masten, Faden, Zucker, & Spear, 2009; Quinn & Fromme, 2011; Rosenquist, Murabito, Fowler, & Christakis, 2010; Talbott et al., 2008).

Overall, the data support the conclusion that there is a "magnitude of problems posed by excessive drinking among college students [and there needs to be] both improved measurement of these problems and efforts to reduce them" (Hingson, Heeren, Winter, & Wechsler, 2005, p. 268). A substance abuse assessment might be one means to address substance use problems and related negative consequences in college students. This study combined 2 years of data to evaluate if a counselor-administered, brief substance abuse assessment-interview experience might result in changes in college students' motivations to use alcohol. First, we provide a description of brief interventions and then describe how change can be measured in three readiness-to-change scores (problem recognition, ambivalence, and taking steps) through use of the Stages of Change Readiness and Treatment Eagerness Scale (SOCRATES). We then describe our study results, followed with discussion, limitations, and implications.

Brief Interventions

Brief substance abuse interventions are one effort intended to reduce abuse and are frequently used with college students (Barnett et al., 2004; Borsari & Carey, 2005; Carey, Scott-Sheldon, Carey, & DeMartini, 2007). In fact, an assessment experience has been found to contribute to positive clinical outcomes (Edwards et al., 1977; Hermansson, Helander, Brandt, Huss, & Rönnberg, 2010; Project MATCH Research Group, 1998; Warren, Nolte, & Weatherford, 2012). In their evaluation of assessments, Kypri, Langley, Saunders, and Cashell-Smith (2007) found that a brief assessment produced a reduction in hazardous drinking for students. Although an alcohol infraction may be an opportunity for an intervention (Holt, O'Malley, Rounsaville, & Ball, 2009), this does not mean clients will be motivated to change (Nochajski & Stasiewicz, 2005; Stein & Lebeau-Craven, 2002). However, research indicates that brief interventions may enhance motivation (Bien, Miller, & Tonigan, 1993; Gaume, Gmel, Faouzi, & Daeppen, 2009).

Generally, brief interventions take place in one to four sessions and often include follow-up contacts (Bien et al., 1993; Kaner et al., 2007). Six conditions are considered important to enhance the effectiveness of brief interventions: **F**eedback regarding personal risk or impairment; emphasis on personal **R**esponsibility for change; clear **A**dvice to change; a **M**enu of alternative change options; therapeutic **E**mpathy as a

counseling style; and enhancement of client **S**elf-efficacy or optimism [FRAMES] (Gaume et al., 2009) There are numerous brief intervention screening instruments. A few common ones include the Alcohol Use Disorders Identification Test (AUDIT); the Drug Abuse Screening Test (DAST); the CAGE (Cut-Down, Annoyed, Guilty, Eye-Opener) and the Brief Alcohol Screening and Intervention for College Students [BASICS] (Madras et al., 2008; Monti, Tevyaw, & Borsari, 2004/2005).

The Addiction Severity Index (ASI) is considered by many to be a brief assessment-interview. The ASI evaluates seven areas of an individual's life including medical, employment, drug/alcohol use, legal, family relationships, and psychiatric challenges; both the client and the counselor rate their perceived severities of the problems and then collaborate on the recommendations (McLellan, Cacciola, Alterman, Rikoon, & Carise, 2006). It is a longer form than some of the traditional brief screening tools such as the CAGE; however, the ASI is usually completed within one to four sessions, which is reflective of the brief intervention structure described above. The results from the ASI are integrated to develop recommendations to match the client's needs. It is a public domain instrument and has been a part of the standard clinical assessment of alcohol and drug abusing persons in more than 20 states (McLellan et al., 2006).

Some research suggests that a substance abuse assessment *is* a brief intervention and "may be one of the most important yet under-emphasized elements of contemporary addiction treatment" (Carise, Gurel, McLellan, Dugosh, & Kendig, 2005, p. 178). A well-done assessment can serve as a foundation for effective follow-up interventions and treatment planning (Kypri et al., 2007). In fact, numerous researchers have suggested that assessment interviews and alcohol screenings can result in positive clinical outcomes and a reduction in drinking (Edwards et al., 1977; Hermansson et al., 2010; Kaner et al., 2007: Kypri et al., 2007; Project MATCH, 1998; Warren et al., 2012).

Combining assessment feedback with referral and resource information can enhance outcomes. Carise et al. (2005) found that clients who received referral and resource information *in addition to an assessment*, were more likely to finish treatment than clients who completed an assessment only. Walters, Vader, Harris, Field, and Jouriles (2009) reported enhanced outcomes in college students when they were encouraged to explore ambivalence and change *and* were provided feedback about drinking patterns, actual college drinking norms, risk factors for heavy drinking, and costs resulting from heavy drinking.

Although counselor-delivered brief assessments and interventions are reported as successful (Barnett et al., 2004; Miller, 2000; Walters et al., 2009), there are also findings in the research supporting positive impacts of web-based only assessments and interventions for substance abuse interventions (Doumas, Workman, Navarro, & Smith, 2011; Saitz et al., 2004). However, it remains important to continue to evaluate changes in outcomes from counselor-administered substance abuse assessments because many training programs and treatment facilities will have counselors complete assessments. In addition, some research has shown interventions to be most effective when there is a person to person relationship that includes empathetic listening and encouragement of autonomy (Saitz, 2005). Carey et al. (2007) conducted a meta-analysis of 62 studies published between 1985 and early 2007 including 13,750 participants with 98 intervention conditions. This analysis evaluated individual-level interventions to reduce

alcohol use in college students and found that individual-level alcohol interventions with face-to-face interventions, including motivational interviewing and personalized normative feedback, resulted in reduced alcohol use in the participants. In immediate follow-up Carey et al found Cohen's d effect sizes ranging from .17 to .41 and in 4–13 week follow-ups effect sizes were found to range from .13 to .21.Miller, Benefield, and Tonigan (1993) reported that clients were more positive and self-motivated when therapists listened instead of confronted (e.g., challenges, disagrees, etc.) clients. To be therapeutic, a counseling relationship needs to be a partnership "and the client's freedom of choice is emphasized" (Rollnick & Miller, 1995, p. 332). The effective counselor's relational stance may be similar to the *nurturing parent* (p. 145) who joins as opposed to judging or directing the client (Norcross, Krebs, & Prochaska, 2010). In fact, just one empathic counseling session can improve outcomes of follow-up treatment (Miller, 2000). Comprehensive substance abuse assessments provided in a context of a caring and collaborative relationship can provide excellent feedback and address the many complex factors and consequences associated with alcohol use and abuse; the level of client readiness may also influence the impact of an assessment (Warren et al., 2012).

Change Readiness in Clients

Research suggests that readiness to change may be related to progress made in counseling (Norcross et al., 2010). Readiness to change continues to be studied in alcohol and drug research (Maisto et al., 2011; Vik, Culbertson, & Sellers, 2000), and one method of indicating readiness to change has been through measuring three factors (i.e., problem recognition, ambivalence, and taking steps) from the SOCRATES. Problem recognition scores are related to one's ability to recognize the existence of a problem; ambivalence scores are related to certainty of having a problem; and taking steps scores are related to action taken with change (Miller & Tonigan, 1996).

A number of studies have found high problem recognition scores to be related to greater severity in drinking; however, this is not necessarily indicative of readiness to change (Bertholet, Cheng, Palfai, Samet, & Saitz, 2009). Freyer et al. (2005) suggested problem severity may reflect an increase in help seeking; however, this may not be related to readiness to change. Elevated problem recognition scores may simply indicate an individual's self-perception of his or her severity of substance abuse problems (Maisto et al., 2011). Nochajski and Stasiewicz (2005) found that *both* high problem recognition and ambivalence scores were *positively* associated with binge drinking. In addition, in a study with 278 heavy-drinking college students, higher recognition and higher ambivalence scores were found in students who reported *more* drinking and alcohol problems than students who had lower scores in both problem recognition and ambivalence (Vik et al., 2000).

Many clients enter counseling with ambivalence. Ambivalence is defined as the discrepancy between values and behaviors (Miller & Rollnick, 2002). Evidence suggests that high ambivalence can decrease behavior changes (Oser, McKellar, Moos, & Moos, 2010). High ambivalence has also been found to be related to problematic use, treatment initiation, and use of alcohol following treatment (Oser et al., 2010). Harmon, McCormick, Werkner, and Zhang (2004) reported that a high ambivalence score significantly predicted longer term alcohol use. In a study with 439 individuals with an

alleged alcohol use disorder, Oser et al. (2010) reported a *reduction* of ambivalence was associated with fewer drinking problems at a 3-year follow-up.

Taking steps refers to action taken to address the potential problems with substance use. In one study, Maisto et al. (2011) found higher taking steps scores to be a predictor of less drinking for male and female adolescents with alcohol use disorders (AUD); thus, taking steps was viewed as a potential measure of readiness for change. However, in an earlier study, Maisto et al. (1999) found higher taking steps scores not to be related to use at 6-months. The relationship between taking steps scores and readiness for change or future use seems to be inconsistent at this point in research findings. However, higher problem recognition and ambivalence scores were found to be related to higher future substance use *and* they have been found to interact with taking steps scores. Small, Ounpraseuth, Curran, and Booth (2012) found that of 733 rural and urban at-risk drinkers, those who had higher recognition *and* ambivalence scores were drinking more at 12-months than those who had lower scores, *unless* they also had high scores in taking action; then they were drinking less.

Some research reports gender differences in measures of change (Borsari & Carey, 2006; Small et al., 2012), and research continues to investigate the impact of gender on motivation to change in substance use (Carey & DeMartini, 2010; Small et al., 2012). In particular, there are gender differences reported in college students' drinking behaviors and changes. For example, men will report higher levels of resistance to change and find more intimacy and support through drinking with peers than women (Borsari & Carey, 2006). "Female students also reported that avoiding another sanction was more important to them and they had more confidence in their ability to do so, when compared to male students" (Carey & DeMartini, 2010, p. 221).

Carey and DeMartini (2010) reported in their study of 677 students who violated their residence hall alcohol policy, males had lower levels of readiness to change than females; females wanted to avoid future sanctions, had higher self-efficacy (Bandura, 1982), and had more confidence in their ability to do so than males. Their findings suggested providing particular attention to enhancing motivation in males. In a study of at-risk drinkers evaluating three factors (i.e., ambivalence, problem recognition, and taking action), Maisto et al. (1999) found higher change scores were found with females compared to males. Small et al. (2012) did not find gender to be related to motivation to change; however, they did find that women have lower alcohol severity problems and have more difficulty recognizing they had a problem compared to males. They suggested that women face more adverse consequences with alcohol abuse than men. Some research suggests that men may feel less free than women to change drinking behaviors (Borsari & Carey, 2006). Given how research has found potential gender differences in motivation and that women are reported to have more confidence in their ability to change than men (Carey & DeMartini, 2010), perhaps the experience of change is different between women and men. Overall, research suggests that gender may differentially influence readiness to change in substance use and factors such as belief in the ability to change use of substances may have some gender-based associations.

The SOCRATES can be used to measure three constructs related to readiness to change motivation and "changes in SOCRATES scores could reflect the impact of an intervention on problem recognition, ambivalence, and taking steps toward change" (Miller & Tonigan, 1996, p. 88). The guiding question of this study was, "Will problem

recognition, ambivalence, and taking steps scores change in college students following completion of a brief substance abuse assessment-interview provided by a counselor-in-training who is offering a therapeutic relationship?"

Method

Participants

The study took place over a 2-year period and involved clients from the 2010-2011 and 2011-2012 academic terms. The setting was a university located in the Rocky Mountain area with approximately 12,000 enrolled students. Referrals for substance abuse assessments were usually made by the court system following an alleged use of alcohol while driving, although occasionally referrals were made by the individuals themselves before a court hearing as suggested by the individual's attorney. The total number of individuals completing the assessment over the 2-year period was 62 (N=62). For this study 25 (n=25) individuals agreed to participate.

The Substance Abuse Assessment-Interview Process

The substance abuse assessment-interviews were administered by counselors-in-training as part of their practicum experience. The practicum focus was on establishing the core skills of a counseling relationship, particularly emphasizing a humanistic, client-centered approach. The training was focused on establishment of trust, empathy building, and client engagement, and was intended to establish a therapeutic relationship. The full assessment-interview experience typically took place over four to five 60-minute sessions and over a time period of four to five weeks. The interview was intended to be only an assessment to determine the level of intervention that may be suggested from the results of the interview.

The *Addiction Severity Index* (ASI) was the assessment-interview instrument used. The ASI provided a structure to the interview. In collaboration with the client seven areas of an individual's life were reviewed including medical, employment, drug, alcohol, legal, family relationship, and psychiatric challenges. The seven areas can be relevant to the complex issues faced by college students. Although the data from the ASI have been found to be valid and reliable among many populations when correctly administered, Makela (2004) examined 37 studies of the psychometric performances of the ASI and found some discrepancies in the performances of the ASI in research and clinical uses. For example, the authors found that Cronbach's alpha on the ASI alcohol use subscale ranged from .46 when given to alcoholic addicts in a Dutch alcohol treatment center to .92 when the participants were patients admitted to a clinical detoxification center. The study showed some inconsistencies in the ASI; however, in general, Cronbach's alpha was above .70. Because "the life situations of drinkers and drug users vary so widely . . . perhaps no single instrument can cover the full range adequately" (p. 408). The focus of this study was not on the reliability and validity of the ASI; however the reader is encouraged to review the literature and identify limitations in the instrument. The originators of the ASI reported adequate test-retest reliabilities (McLellan, Luborsky, Cacciola, & Griffith, 1985).

The ASI was used in this study because at the time of this study, it was the state-required assessment-interview instrument and the training clinic is a state-certified

substance abuse evaluation site. Although the results of ASI were not the focus of this study, they allowed a window into the individualized problems with substance use and facilitated the development of treatment recommendations and referrals for formal interventions following the completion of the interview process. Suggested interventions could range from no follow-up to full intensive inpatient treatment. The training clinic did not provide the treatment. If a client requested, and signed an appropriate release form, the follow-up treatment recommendations derived from the assessment were sent to the court.

The Stages of Change Readiness and Treatment Eagerness Scale (SOCRATES, Personal Drinking Inventory-Version 8A) was given to each participant before and following their assessment. The pre-assessment questionnaire asked demographic and background information including age, educational level, gender, racial identification, reason for referral, and what the client wanted from the referral.

Instruments

The SOCRATES (Version 8A) is a self-administered 19-item instrument initially designed to measure motivation to change among individuals who have been reported to misuse alcohol (Bertholet et al., 2009; Harmon et al., 2004; Miller & Tonigan, 1996; Small et al., 2012). It was used in this study to measure participants' potential changes in three areas following completion of the substance abuse assessment-interview.

This instrument has three subscales: problem recognition, ambivalence, and taking steps. The SOCRATES instrument includes seven questions about *problem recognition,* meaning a level of direct acknowledgement of problems with drinking (e.g., "My drinking use is causing a lot of harm"); four statements on *ambivalence,* meaning a level of uncertainty about having a problem (e.g., "Sometimes I wonder if I am in control of my drinking"); and eight items about *taking steps*, meaning a level of actions taken already to make changes (e.g., "I am working hard to change my drinking"). These three scores are factorially-derived scale scores (Miller & Tonigan, 1996). The SOCRATES 8A poses questions specifically about alcohol use and is a public domain instrument not requiring special permission to use.

Each of the three scales (recognition, ambivalence, and taking steps) results in raw scores ranging from very low to very high. For example, a very low score for recognition would be in the range from 7-26, while a high score would be 35; for ambivalence a very low score would be 4-8 and a very high score would be 19-20; and a score of 8-25 for taking steps is considered very low while a score of 39-40 is very high. These interpretive ranges are based on an original sample of 1,726 adult men and women who were presenting for alcohol treatment (Miller & Tonigan, 1996), and thus are not necessarily applicable to all populations; instead they are simply ranges to work with.

The alpha coefficients for the three subscales have ranged from .60 (Ambivalence) to .85 (Recognition; Carey, Purnine, Maitso, & Carey, 1999). Although the recognition and taking steps scores seem to be reliable and stable, reliability for the ambivalence scale remains mixed. Cronbach's alpha for this sample was calculated; reliability was .89 on *recognition*, .93 on the *ambivalence* subscale, and .98 on the *taking steps* subscale. These values are consistent with findings from Miller and Tonigan (1996). Although the SOCRATES is used to provide evidence of an increase in readiness to change, some studies show conflicting evidence between the measures and client

outcomes (Bertholet et al., 2009). These concerns are important to consider in the interpretation of any results.

Procedure

The study was approved by the university's Institutional Review Board (IRB), and ethical research principles were followed (Lambert, 2011). Data were collected from October 2010 through April 2012 in a counselor training clinic which is part of a Council for Accreditation of Counseling and Related Educational Programs (CACREP) accredited clinical training program in the Rocky Mountain region. Each counselor-in-training administered the ASI evaluation with the intention to establish a therapeutic relationship and take whatever time might be needed to address the seven areas. A comprehensive assessment-interview was intended to enable recognition of the complexities involved in alcohol use as identified in the literature review of this study. It was considered important to understand what the use may mean for each individual. Once the interviews were completed, all clients were offered varying recommendations ranging from no-treatment to a full treatment program.

Data Analysis

Because this study included 2 years of data, independent sample t-tests were conducted in SPSS version 20 to identify potential differences in the participants on the three subscales of the SOCRATES. Chi-square tests of homogeneity were run to look for differences in gender, age, and level of education. No significant differences between the 2 years of data were found; therefore, the data from both years were combined. The research question was addressed with paired-sample t-tests, with the pre- and post-SOCRATES constructs compared for significant differences in scores in problem recognition, ambivalence, and taking steps. To reduce the possibility of family-wise error, modified Bonferroni alpha levels were used to determine significance (Olejnik, Li, Supattathum, & Huberty, 1997). A difference in results was considered significant if the probability was less than .017, the result of dividing an alpha-level of .05 by three, one for each construct analyzed. Using this conservative Bonferroni measure, the results were significant.

Results

Participants

From the total number of individuals (N=62) who completed the brief intervention, 25 (n=25) agreed to participate in the study. Eleven (44%) were female and 14 (55%) were male. The age range was from 19-33 years old, with the average age being 22.6 (SD=3.8). The majority of the participants identified as Caucasian (n=23) with one Latino/a, and one Native American. The participants' level of education ranged from high school diploma to graduate school. All participants except one were mandated by an external agency such as the court, a probation officer, an attorney, or a judge. One participant was self-referred.

Instrument Scores

Following the interview assessment, the participants scored significantly lower on problem recognition and on ambivalence (see Table 1). Power was calculated to be 86% for problem recognition and 93% for ambivalence. In the combined gender sample there was no significant difference in pre- and post-assessment scores on taking steps. However, the responses to taking steps were different based on gender (see Table 2). Females did not show significant changes in their scores on taking steps, while males' scores were significantly lower on the post-test scores on taking-steps; power was 67% for this difference.

Table 1

Scores and T-Statistics for SOCRATES Subscales

Sub-scale N = 25	Mean score (SD)	t-statistic (24 degrees of freedom)	Significance	Effect Size
Re (pre-assessment)	13.52 (5.46)	-3.17	0.004*	0.34
Re (post-assessment)	11.76 (4.88)			
Am (pre-assessment)	7.52 (3.04)	-3.64	0.001*	0.47
Am (post-assessment)	6.16 (2.79)			
TS (pre-assessment)	23.22 (10.83)	-1.01	0.323	0.09
TS (post-assessment)	22.26 (11.11)			

Note. Re=Problem Recognition (possible range 7-35); Am=Ambivalence (possible range 4-20); TS=Taking Steps (possible range 8-40). Subscale scores are based on the following response options: 1= NO! Strongly Disagree, 2=No, Disagree, 3=Undecided or Unsure, 4=Yes, Agree, and 5=YES! Strongly Agree. A '*' denotes significance at the .017 level. Cohen's d was used to calculate effect size.

The post-substance abuse assessment-interview questionnaires asked how the experience was for the participants. Every participant in this study responded to the post-assessment-interview narrative with positive comments about the helpfulness of the counseling relationship. For example, one participant stated, "The most helpful part of the [assessment] experience was being able to talk to someone on a personal level and have them help guide me to a better understanding of personal control and responsibility." Another said the interview "was great" and that the most helpful part was being able "to talk about my experiences with someone who listens well."

Discussion

The findings from this study indicated that *both* problem recognition and ambivalence scores *decreased* following the substance abuse assessment. Both lower problem recognition and lower ambivalence scores could be related to fewer problems in alcohol use in the future. Higher recognition scores have been found related to greater problems in drinking (Bertholet et al., 2009; Freyer et al., 2005; Nochajski & Stasiewicz, 2005). When recognition remains high, this may suggest that the client needs to take action to reduce drinking or be referred to treatment (Bertholet et al., 2009). Research has found the individuals who had high recognition of their drinking problems without taking steps were drinking more heavily at 12 months, while those who had higher scores on

taking action did drink less at 12 months (Small et al., 2012). Therefore, the meaning of problem recognition needs to be considered in conjunction with other factors such as taking steps and self-efficacy (Miller & Tonigan, 1996). Even so, lower problem recognition could be a sign of reduction in future use problems.

Table 2

Scores on Taking Steps

Gender	**N**	**Mean Score (SD)**	
		Pre-test	Post-test
Male	14	21.14 (11.25)	18.23 (11.04)*
Female	11	26.00 (11.52)	27.72 (10.67)

Note. A '*' denotes significance at the .017 level. Taking Steps refers to actions being done to make changes; the scores can range from 8-40.

Although the individual meaning of lowered ambivalence may be subject to interpretation, research demonstrates that a high ambivalence is related to a higher alcohol use (Harmon et al., 2004; Oser et al., 2010; Nochajski & Stasiewicz, 2005; Vik et al., 2000) and a lower ambivalence is related to a reduction in future alcohol use (Oser et al., 2010). Lower ambivalence scores could mean the individual does not wonder if they drink too much, are in control, or are hurting others (Miller & Tonigan, 1996). Vik et al. (2000) described low ambivalence scores similar to those whose drinking had not escalated to the point of having negative consequences. Perhaps the lowered ambivalence score is a reflection of increased self-efficacy, and ultimately this could mean there is not a question about alcohol abuse in the future.

In general, the findings from this study suggest that problem recognition and ambivalence may decrease in college students following completion of a counselor-administered substance abuse assessment-interview. Perhaps these changes in scores mean an assessment impacts change, thus supporting related research (Bien et al., 1993; Carise et al., 2005; Gaume et al., 2009; Hermansson et al., 2010; Kypri et al., 2007). In addition, lower problem recognition and ambivalence could be related to less use in the future (Oser et al., 2010). To understand the real meanings of lowered ambivalence and problem recognition, additional feedback and insights would need to be obtained from the clients themselves. Although speculative, for this study, the implications are that there was a significant change in scores following the assessment and these changes could mean these participants felt less uncertainty (lower ambivalence) and perceived themselves as having a problem they could manage (lower problem recognition). Research indicates that lowered ambivalence and lowered problem recognition are both related to lowered problems in use in the future. Given the extent of problems with substance abuse with college students, this type of interview may contribute to a reduction of future use, which could represent one positive effort to reduce problems in use for college students (Hingson et al., 2005; Warren et al., 2012).

Because the changes in the overall sample were not significant for the taking steps scores, potential interactions between levels of problem recognition, ambivalence, and taking steps cannot be discussed with credibility for this study. However, the fact that SOCRATES results from one brief substance abuse assessment-interview showed significant differences in gender responses to taking action (see Table 2) is in line with

the research identifying how gender may influence alcohol use, motivation, and treatment response (Borsari & Carey, 2006; Carey & DeMartini, 2010; Maisto et al., 1999; Small et al., 2012). The results indicated that females did not show significant changes in their scores on taking steps, while males scored significantly lower on the post-test scores on taking-steps. Based on earlier research findings, change with substance use may mean different things to women and men (Borsari & Carey, 2006; Carey & DeMartini, 2010). For this study, the reduction in taking steps scores in men might reflect the difficulty of taking steps to change drinking for males, similar to the findings by Borsari and Carey (2006).. The results support the findings by Carey and DeMartini (2010) who suggested "gender-specific tailoring [is needed and] may enhance the efficacy of brief alcohol interventions offered to mandated students" (p. 222). The impact of gender is a consideration to keep in mind at all times.

Limitations and Directions for Future Research

Even with implications there are limitations. The homogeneous (college students/similar ages) nature of the participants will limit the generalizability of the results. The small sample size (n=25) may limit the power of the analysis to discern differences in the participants. Self-reported data have challenges given some participants may be hesitant to report accurate intentions due to the perceived legal concerns. Given that the participants were required to complete an interview, control conditions could not ethically be offered. There is not a way to determine how and if the assessment experience per se impacted reported changes differently from a computer-based assessment and/or non-assessment condition (a control group). Respecting the autonomy of all clients (Lambert, 2011) also meant a significant number of clients did not participate; consequently, biases of self-selection may be evident in the results. All services were provided by counselors-in-training which may limit generalizations to alternative settings. The fact that there was a substance abuse assessment-interview requirement could have affected the counseling relationship.

The outcomes of the evaluation occurred within a fairly short time period; therefore, it is recommended that future research would include at a least 6-month follow-up to determine if the changes were still intact (Doumas et al., 2011). The comments made by the participants indicated their experiences were positive. To ascertain the impact of the relationship would require a replication of this study to include such methods as a control group where there would not be the relationship-based assessment, perhaps only a computer- or web-based procedure. In addition, a qualitative approach to investigate the experiences of the clients could add depth and credibility to this study. In addition, the study needs to be replicated with alternative intervention settings and conditions.

Given the magnitude of problems faced by college students, all efforts made to reduce abuse of alcohol are important. Counselor-provided substance abuse interventions may be one successful means to reduce substance abuse among college students. The substance abuse assessment-interview experience could be considered as one effective form of a brief intervention, setting the stage for a therapeutic alliance and enabling *reduction* of both ambivalence and problem recognition in a client, which has been shown to be related to reductions in future use. Why and how these changes occurred can

only be determined by further in-depth research. Measuring pre- and post-assessment changes may provide insight into the nature of changes that might occur.

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