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# Risky Sex and Alcohol-Related Behaviors and Cognitions in Adolescents: Evaluating a Values-Based Intervention

Meredith K. Chapman  
*Seattle Pacific University*

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Risky Sex and Alcohol-Related Behaviors and Cognitions in Adolescents:  
Evaluating a Values-Based Intervention

Meredith K. Chapman

A dissertation submitted in partial fulfillment

of the requirements for the degree of

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In

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School of Psychology, Family, and Community

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Approved by:

David G. Stewart, Ph.D.  
Chief of Psychology  
Cambridge Health Alliance  
Harvard Medical School  
Dissertation Chair

Amy H. Mezulis, Ph.D.  
Associate Professor  
Committee Member

Melissa A. Lewis, Ph.D.  
Professor  
Department of Psychiatry and Behavioral Sciences  
University of Washington  
Committee Member

Reviewed by:

Amy H. Mezulis, Ph.D.  
Chair, Department of Clinical Psychology

Katy Tangenberg, Ph.D.  
Dean, School of Psychology, Family, and  
Community

## Table of Contents

List of Figures .....	iv
List of Tables .....	v
Dedication .....	vi
Acknowledgment .....	vii
Abstract .....	viii
CHAPTER I .....	9
Introduction and Literature Review .....	9
Purpose .....	9
Risky sexual behaviors .....	11
Problematic alcohol consumption .....	12
Dysregulation .....	14
Expectancies .....	16
Acquired preparedness model .....	19
Underlying processes .....	22
Values .....	24
Personalized feedback interventions .....	26
Values clarification as an intervention tool .....	29
CHAPTER II .....	35
Method .....	35
Sample and Participant Selection .....	35
Participants .....	35
Recruitment .....	36
Assessments and Measures .....	37
Alcohol consumption .....	37
Alcohol consequences .....	38
Risky sexual behaviors .....	39
Dysregulation .....	40
Sex and alcohol expectancies .....	41
Procedure .....	42
Random assignment .....	42
Baseline and follow-up procedures .....	42
Values card sort .....	43
Personalized normative feedback .....	44
CHAPTER III .....	47
Results .....	47

Power Analysis.....	47
Data Entry .....	48
Descriptive and Preliminary Analyses .....	50
Repeated Measures: Differences between TAU and VCS.....	55
Serial Mediation: Sex Related Alcohol Expectancies and Alcohol Use.....	60
CHAPTER IV .....	64
Discussion.....	64
Effectiveness of a Values Card Sort Intervention. ....	65
Acquired Preparedness Model.....	65
Clinical Implications .....	67
Limitations .....	69
Future Research.....	72
References.....	74

## List of Figures

Figure 1. Acquired preparedness model of risk. Trait of dysregulation shapes development of expectancies that influence engagement in problematic alcohol use.....	21
Figure 2. An illustration of the proposed experimental model (Hypothesis 1). Alcohol, RSB, and positive sex-related expectancies will have greater reductions in the experimental group (VCS) than in the treatment as usual group (TAU).....	33
Figure 3. Proposed serial multiple mediation model (Hypotheses 2-7). Sex-related alcohol expectancies and alcohol use mediate the relationship between dysregulation and risky sexual behaviors. ....	34
Figure 4. Intervention flowchart .....	46
Figure 5. Reductions in alcohol use over time between the TAU and VCS group conditions.....	59
Figure 6. Reductions in unprotected sexual experiences over time between the TAU and VCS group conditions. ....	60
Figure 7. Reductions in average scores of sex-related alcohol expectancies over time between the TAU and VCS group conditions. ....	60
Figure 8. Serial multiple mediation model of dysregulation on risky sexual behaviors with M1 as sex related alcohol expectancies and M2 as problematic alcohol use. ....	63

## List of Tables

Table 1. Study Sample Demographics.....	36
Table 2. Sample Sizes Required for Given Effect Sizes of Mediation Model .....	48
Table 3. Sample Sizes Required for Given Effect Sizes of Longitudinal Model .....	48
Table 4. Variable Differences between Treatment Completers and Non-Completers .....	52
Table 5. Intercorrelations among study variables by gender .....	53
Table 6. Demographic Descriptives by Group Condition .....	54
Table 7. Independent Samples t-Test by Group Condition.....	54
Table 8. Independent Samples t-Test by Academic Setting .....	55
Table 9. Means and Standard Deviations for TAU and VCS groups .....	57
Table 10. Repeated Measures MANOVA of Time by Group Condition with Study Variables of Alcohol Quantity and Frequency, Risky Sexual Behaviors, Condom Use, and Sex Related Alcohol Expectancies .....	58
Table 11. Repeated Measures MANOVA of Time by Group Condition with Study Variables of Alcohol Quantity and Frequency, Condom Use, and Sex Related Alcohol Expectancies....	58
Table 12. ANCOVA for the outcome of alcohol consequences with baseline consequences as a covariate.....	58
Table 13. Results of Serial Mediation Model of Dysregulation on Risky Sexual Behaviors Mediated by Sex Related Alcohol Expectancies and Alcohol Use .....	62

## **Dedication**

This manuscript is dedicated to my parents for encouraging me to pursue my passions and instilling in me the value of serving others. To Dr. David Stewart, for your consistent unconditional negative regard and then, at the end, all of the praise and positive reinforcement that I needed to finish this project. Lastly, to Kevin. Thank you for joining me right at the beginning of this adventure and for your steadfast reassurance, dedication, and love.

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## Abstract

The co-occurrence of alcohol use and risky sexual behavior is prevalent among underage drinkers and causes numerous psychosocial and health related consequences. There is a need for interventions to target these risk-taking behaviors. The purpose of this study was to test the efficacy of a values-based intervention to decrease risky sex, problematic alcohol behaviors and related expectancies. These risk-taking behaviors were also examined in the context of an acquired preparedness model (APM). Thirty-eight youth from a high school and university setting completed both time points. Participants were randomly assigned into one of two treatment conditions: a treatment as usual group that received personalized normative feedback and the experimental condition that received an additional values card sort. Results indicated no difference between treatment groups in the reduction of alcohol use behaviors and risky sex. However, the main effect of time was significant with statistically significant reductions in alcohol use [ $F(1, 35) = 17.76, p < .001$ ], unprotected sex [ $F(1, 35) = 18.18, p < .001$ ], and sex related alcohol expectancies [ $F(1, 35) = 10.86, p = .002$ ] in both group conditions. The overall model of serial mediation tested the indirect effects of sex related alcohol expectancies and problematic alcohol use on the relationship between dysregulation and risky sexual behaviors and was significant [ $R^2 = 0.34, F(3, 34) = 5.82, p < .005$ ]. These findings indicate that a values card sort intervention does not evidence greater reductions in alcohol and sexual behaviors over time compared to personalized normative feedback. Underage drinkers who received either type of direct intervention experienced decreases in risk taking behaviors and related expectancies. Additionally, in the context of the APM, individuals with trait dysregulation and positive sex-related alcohol expectancies are at greater risk for engaging in sexual risk taking. Clinical implications, study limitations, and future research directions are discussed.

## CHAPTER I

### **Introduction and Literature Review**

#### **Purpose**

Sexual risk-taking, such as sex with multiple partners, unfamiliar persons, inconsistent condom use, and early age of sexual debut among adolescents, is a major public health concern (World Health Organization [WHO], 2011). Nearly half (46.8%) of U.S. high school students have engaged in sexual intercourse, and youth between the ages of 15 and 24 years old represent half of newly diagnosed occurrences of sexually transmitted infections (STIs) each year (Centers for Disease Control and Prevention [CDC], 2014b, 2014c). Additionally, 21% of all new Human Immunodeficiency Virus (HIV) diagnoses in the U.S. are diagnosed among adolescents and young adults (CDC, 2014a). It has been well established in the literature that alcohol consumption independently influences decisions to have sex and engage in indiscriminate forms of risky sex, including decreased protective behaviors (Cooper, 2002; Rehm, Shield, Joharchi, & Shuper, 2011; Seth, Wingood, DiClemente, & Robinson, 2011). The co-occurrence of alcohol use and risky sexual behavior (RSB) is prevalent during adolescence; among sexually active high school-aged youth nationwide, 22.4% used substances before their last sexual intercourse (CDC, 2013). This prevalence rate has not changed significantly in over a decade, indicating the challenge of simultaneously intervening with these two high-risk behaviors. The high transmission rates of STIs among adolescents, and its related health and psychosocial consequences, demonstrate the need for interventions aimed to reduce alcohol consumption and concomitant sexual behavior.

A common therapeutic style used in substance abuse interventions, motivational interviewing (MI), has proven effective in reducing risky problem behaviors including heavy

episodic drinking, drug use, and unsafe sexual practices with adolescents and young adults (e.g., Carey & Lewis, 1999; Marlatt et al., 1998; Wagner, Brown, Monti, Myers, & Waldron, 1999). MI is a client centered therapeutic style focused on the exploration and reinforcement of intrinsic motivation to drive healthy behavioral choices and address discrepancies between behavior and attitudes (Miller & Rollnick, 2002). One way of targeting these discrepancies is through a tool called personalized normative feedback, which is commonly used in Motivational Enhancement Therapy (Miller, Zweben, DiClemente, & Rychtarik, 1995). Additionally, the clarification of personal values has been researched as an important mechanism, and a unique psychological variable, that influence decision-making and behavior. Past studies have analyzed the relationship between values and risky behaviors and found that the value priorities of those that engage in unhealthy behaviors differ notably from those that choose more healthy behaviors (Schwartz & Inbar-Saban, 1988; Toler, 1975). Values and motivation have also both been examined specifically in relation to alcohol use and RSB (e.g., Fisher, Fisher, Bryan, & Misovich, 2002; Rosengard et al., 2001; Rosengard, Adler, Millstein, Gurvey, & Ellen, 2004; Shih, Miles, Tucker, Zhou, & D'Amico, 2012). However, these two powerful components of behavioral change have not yet been combined, in the form of a values card sort intervention, to promote behavioral and cognitive change for concurrent alcohol consumption and risky sexual behaviors in a sample of adolescents and young adults.

The purpose of this study is to test the efficacy of a values-based intervention to decrease risk behaviors and associated attitudes related to problematic alcohol consumption and sexual intercourse. My dissertation addresses this goal by utilizing a small scale efficacy study to empirically test a brief values card sort intervention with the intent of enhancing personalized feedback to reduce alcohol use, risky sexual behaviors, and favorable sex-related expectancies

among a sample of underage drinkers. This experimental group was compared to a treatment as usual group that only received personalized normative feedback. Additionally, the acquired preparedness model served as the theoretical framework under which alcohol use, RSB, and related expectancies were integrated (Smith & Anderson, 2001) and were also examined in the context of these risk behaviors.

In this chapter, RSB and problematic alcohol consumption are briefly reviewed, the acquired preparedness model summarized as a unifying theoretical model, and the components of MI and its application to risk behavior among adolescents examined. Research regarding value systems is explored and applied to the tenants of MI and connected to the larger acquired preparedness model. Lastly, the current study is described.

### **Maladaptive Behaviors**

**Risky sexual behaviors.** Risky sexual behaviors (RSBs) are commonly defined as behaviors that increase the risk of contracting a STI and/or experiencing an unintended pregnancy. Specific behaviors can include sex at an early age, multiple sexual partners, sex while under the influence of alcohol and/or drugs, and unprotected sexual intercourse (CDC, 2013). Adolescence is a time of rapid change, and although fewer than 2% of youth have sex before 12-years-old, nearly half of teenagers (46.8%) have sexual intercourse before the end of high school. This number climbs dramatically after high school when 71% of 19-year-olds have had at least one sexual experience (Guttmacher Institute, 2014). During the most recent national survey among U.S. high school students, 34% of adolescents were currently sexually active and 40.9% did not use a condom during their last sexual experience. Additionally, 15% of youth had sex with four or more people in their lifetime (CDC, 2014c).

High risk sexual behaviors may cause consequences that can impact both psychosocial functioning and physical health. Although 15 to 24-year olds represent only one-quarter of the sexually active population, they account for nearly half (9.1 million) of new diagnoses of STIs each year (CDC, 2014b). Individuals between the ages of 13-24 represented 21% of all new HIV cases in the United States (CDC, 2014a). Additionally, the US rate of teen pregnancy continues to be the highest in the developed world with almost 6% of youth between the ages of 15 to 19 becoming pregnant each year (Kost & Henshaw, 2014). Reports demonstrate that 52% of teen pregnancies are unplanned; 60% of pregnancies in 2010 resulted in live birth while 26% ended in an abortion and the remaining were miscarried (Finer & Zolna, 2011). To reduce these high risk sexual behaviors and related health problems it is imperative that young people adopt lifelong attitudes and behaviors that support positive regard for overall healthy lifestyles; including sexual behaviors.

Extensive research suggests that RSB typically occurs in the context of other delinquent and problem behaviors. Smoking, truancy, and early use of alcohol and illicit drugs are often correlated with early sexual debut (Lanctot & Smith, 2001; Whitbeck, Yoder, Hoyt, & Conger, 1999). Combining substance use and sexual behavior increases the risk of contracting HIV and STIs. Studies have found that alcohol use is associated with multiple sexual risk behaviors including early onset of intercourse and sex with casual partners (Shrier & Crosby, 2003; Stueve & O'Donnell, 2005). Since alcohol use is uniquely associated with RSB, it is important to understand the mechanisms that drive these problem behaviors and develop interventions to target problematic alcohol consumption and sexual risk behaviors.

**Problematic alcohol consumption.** In 1984, the United States passed the National Minimum Drinking Age Act to penalize states that allowed individuals under 21 years old to

either purchase or publically possess alcoholic beverages by withholding federal funds (Toomey, Nelson, & Lenk, 2009). In effect, all fifty states are now in compliance with this act, however the consumption of alcohol is often seen as normative and a rite of passage during adolescence. Therefore, several factors must be considered when determining whether alcohol use is problematic in this developmental period, including DSM (APA, 2000) diagnostic criteria, consequences related to drinking, and patterns of use.

Patterns of use include quantity and frequency of drinking (i.e. how much and how often). Heavy episodic drinking is a pattern characterized by consuming five or more drinks in a row (four or more drinks for women) in a single occasion of drinking (NIAAA, 2004; Wechsler & Nelson, 2001). However, the applicability of this definition to all individuals is difficult since alcohol can affect each person differently. To more clearly interpret binge drinking, Newburn and Shiner (2001) suggest that the clinical definition refer to “continuous, dependent drinking over a day or more until the drinker is unconscious” (p. 7). The key feature of this definition is the extensive time period spent consuming alcohol where typical daily activities and obligations are impacted. According to recently published data from the CDC, nearly 21% of high school students sampled had five or more alcoholic drinks in the last 30 days before the survey. Prevalence rates were highest among white male students who were in their junior or senior years of high school (CDC, 2014c).

Heavy episodic drinking is not exclusive to adolescents, but there is a notable pattern of alcohol-related consequences experienced by underage drinkers. Alcohol intoxication, drunkenness, or binge drinking are the most common patterns of drinking that lead to problems such as crime, violence, and accidents in youth (Hingson, Zha, & Weitzman, 2009; O’Brien et al., 2006) These behaviors are also typically clustered with other teenage risk-taking activities

associated with experimentation and include smoking, RSB, and drug use. This pattern is reflected in mortality rates of young people since a majority of youth die from indirect effects of alcohol use such as unintentional injuries, homicide, and suicide (White & Hingson, 2013; Windle & Zucker, 2010). Additionally, although experimentation with alcohol and drugs is more common among adolescents, Helzer et al. (1999) found that 40% of adults with an alcohol use disorder first developed patterns of problematic drinking in late adolescence.

Lastly, problematic alcohol consumption can be diagnosed from the Diagnostic and Statistical Manual of Mental Disorders (DSM) as an alcohol use disorder. For an alcohol use disorder to be diagnosed, at least two symptoms from the eleven criteria need to be endorsed and severity of the disorder is defined as either mild, moderate, or severe depending on the number of diagnostic criteria met. Since teenage drinking can be conceptualized as normative, diagnostic criteria assist clinicians in distinguishing problematic drinking from developmentally appropriate behavior. Understanding how problematic alcohol consumption develops, from a theoretical context such as the acquired preparedness model, can also aid clinicians in preventing later adult substance use disorders.

### **Acquired Preparedness Model**

**Dysregulation.** Psychological dysregulation is the inability to regulate emotion, behavior, and cognitions sufficiently in response to environmental challenges (Clark, Thatcher, & Tapert, 2008) and is often related to low self-control, disinhibition, and impulsivity which is associated with risky behaviors in adolescence (Schreiber, Grant, & Odlaug, 2012; Wills, Pokhrel, Morehouse, & Fenster, 2011). Adolescents who have difficulty with psychological dysregulation are also at an increased risk for problem behaviors due to personal vulnerabilities,

perceptions, or expectations of the environment and the rewards and consequences of their behaviors (Dawes et al., 2000; Jessor, 1987; Martin et al., 1994; Mezzich et al., 2007)

One model of dysregulation, proposed by Patterson and Newman (1993), integrates three personality traits often identified as risk factors for problem drinking: neuroticism, extraversion, and disinhibition. The model suggests that some individuals are more highly attracted to the pursuit of reward while others are more focused on the avoidance of punishment. The difference between these two groups is most noticeable when a behavior might present an opportunity for both reward and punishment. In this situation, approach for reward individuals will be more fixated on seeking a reward, and as the model posits, will be less likely to stop and modulate a response when given punishment cues. Emotionally reactive (neurotic) extraverts are more likely to pursue rewards than focus on avoiding punishment when both outcomes are possible. Moreover, these individuals are less likely to stop and reflect on an event that elicits punishment and are less likely to form associations involving cues that predict punishment; this pattern of responding is more likely to be affected by expectations of reward than by cautionary thoughts of punishment (Patterson & Newman, 1993). This model is applicable to adolescents who engage in problematic alcohol use and RSB for two reasons: An active, reward-based personality style makes an individual more inclined to engage in behaviors (drinking and sex) that are perceived as both rewarding and potentially punishing. And, once active reward-seeking individuals engage in these problem behaviors they are more likely to attend to and remember the rewarding aspects of the experience rather than any cues of punishment.

Psychological dysregulation has been found to be an underlying problem for numerous adolescent problem behaviors including RSB and alcohol abuse (Jessor, 1987; Tarter, Horner, & Ridenour, 2012). The combinations of decreased ability to self-regulate, as well as negative and



positive reinforcement for behaviors, tend to make an individual vulnerable and more prone to engage in these problematic behaviors. Numerous studies have found that dysregulation (Tull, Weiss, Adams, & Gratz, 2012; Winters et al., 2009), disinhibition, and impulsivity (Kahn, Kaplowitz, Goodman, & Emans, 2002; Lejuez, Bornovolova, Daughters, & Curtin, 2005) significantly predicted RSB among adolescents. Adolescents who have poor self-regulation strategies, specifically those who are emotionally dysregulated, are more likely to engage in RSB in the face of negative affect (Miller, Vachon, & Aalsma, 2012). Emotional dysregulation has also been shown to predict frequency of sex with an unknown person and number of lifetime sexual partners (Messman-Moore, Walsh, DiLillo, 2010). In addition to emotional dysregulation, behavioral dysregulation has also been implicated in RSB among samples of individuals with especially elevated levels of dysregulation such as Borderline Personality Disorder (Selby et al., 2010). With regard to cognitive dysregulation, low executive functioning has been found to predict high rates of sexual behavior and has also been associated with RSB related to sexual victimization (Golub, Starks, Kowalczyk, Thompson, & Parsons, 2012; Lutz-Zois, Roecker, & Reichle, 2011). Thus, all degrees of psychological dysregulation—emotional, behavioral, and cognitive—have been shown to predict RSB.

**Expectancies.** Expectancy theory is a fundamental learning theory of how new behaviors are acquired. Initially proposed by James (1890) and later formulated explicitly by Tolman (1932), expectancy theory identifies how early learning experiences influence choices that affect behavior later in life. This theory reflects one specific formulation of a number of related theories that each associate cognitive mechanisms to early learning that later impact behavioral choices. This theory emphasizes how any new behaviors are acquired and it highlights cognition and memory in learning. This theory suggests that the repeated perception of an association between

a behavior and its outcomes will lead to the storage of these associations in one's memory in the form of "if-then" relationships between behavior and consequences, also called expectancies. (Smith & Anderson, 2001). In turn, these learned associations influence later decisions made in life.

Since these learned associations influence later, life decisions, expectancy theory has been applied to a wide range of researched topics in psychology including alcohol use. Based on seminal research from Marlatt, Demming, & Reid (1974) expectancies observed behaviorally were noted to influence alcohol consumption in an experimental condition. Since, numerous studies have documented that early learning experiences eventually influence later drinking choices (Christiansen & Goldman, 1983; Fromme & D'Amico, 2000; Goldman, Brown, Christiansen, and Smith, 1991). Learning experiences can be direct experiences with alcohol such as the reward of enjoying alcohol at a party or the consequence of feeling sick after drinking too much. However, procurement of alcohol expectancies does not have to involve direct experiences with alcohol. Bandura (1986) was the first to emphasize the role of vicarious learning or modeling. Many studies demonstrate that young children, without any direct drinking experience, form clear views of both the appropriateness (Casswell, Gilmore, Silva, & Brasch, 1988) and negative effects (Kraus, Smith, & Ratner, 1994) of drinking alcohol. Expectancies have also been examined in the context of other risk behaviors including RSB. Sex-related alcohol expectancies include positive beliefs that alcohol decreases sexual inhibition and increases sexual enhancement, and research demonstrates that these expectancies contribute to an increase in sexual risk behavior (e.g., Bryan, Ray, & Cooper, 2007; Dermen, Cooper, Agocha, 1998; Hendershot, Stoner, George, & Norris, 2007).

A seminal study by Marlatt, Demming, & Reid (1973) used a balanced-placebo design to examine the behavioral impact of expectancies on alcohol consumption. The researchers found that increased alcohol consumption, following an initial alcoholic drink, was based on positive expectancies rather than the pharmacological properties of alcohol. Since this initial study, numerous researchers have developed and tested scales to measure alcohol expectancies (Brown, Goldman, Inn, & Anderson, 1980; Connors, O'Farrell, Cutter, & Thompson, 1986; Young & Knight, 1989). These scales measure an individual's currently held alcohol expectancies, which are assumingly formed on the basis of varied learning experiences. These authors believe that the measure is a product of influential early learning with both indirect and direct alcohol experiences. Expectancy scales are measuring a very immediate, proximal influence on drinking that is currently stored in an individual's memory. To date, most studies have focused on the relationship between expectancies and drinking behavior of adults (Brown, Goldman, & Christiansen, 1985; Connors et al., 1986; Mann, Chassin, & Sher, 1987) and adolescents (Brown, Creamer, & Stetson, 1987; Smith & Goldman, 1994) both in clinical and nonclinical populations, thus demonstrating that alcohol expectancy correlates highly with alcohol consumption across a wide range of ages and drinking groups. Dermen and Cooper (1994) created a scale to measure expectancies specifically related to both sex and alcohol. The scale was developed with a sample of sexually experienced adolescents and indicated that sex-related alcohol expectancies were better predictors of alcohol consumption in sexual situations than generalized alcohol expectancies.

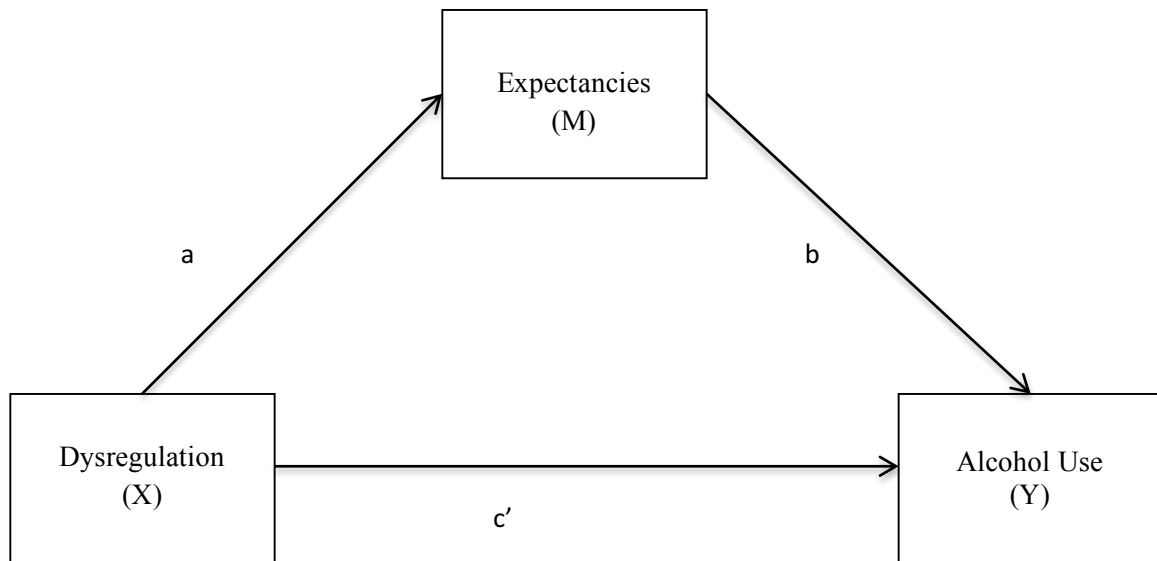
Interventions to manipulate expectancies have proven successful in the reduction of alcohol consumption (Darkes & Goldman, 1998; Friedman, McCarthy, Pedersen, & Hicks, 2009). A recent meta-analysis by Scott-Sheldon, Carey, Elliot, Garey, & Carey (2014) found that

behavioral interventions for freshmen college students were efficacious at decreasing alcohol use and related consequences. The researchers demonstrated that the type of intervention (i.e. PNF, strategies to moderate alcohol consumption, challenges to expectancies, and alcohol-related goal setting) moderated the effect, and programs that utilized these components showed greater reductions in quantity and frequency of alcohol use. Specifically, they found that challenging alcohol-related expectancies was effective at not only reducing the frequency of heavy episodic drinking but also alcohol-related consequences. Based on recent research, there is ample evidence to support this learning theory based model of risk and its role in understanding how alcohol's expected consequences early in life shape subsequent drinking behavior.

**Acquired preparedness model.** The two risk factors described above, dysregulation and alcohol expectancies, coalesce to create an acquired preparedness model that leads to alcohol abuse problems. An acquired preparedness model indicates that there is a genetically influenced trait of dysregulation where an individual is prone to learn the reinforcing, rather than the punishing, consequences of behaviors. When applied to alcohol abuse, the model suggests that the development of alcohol problems is acquired when the trait of dysregulation (the learning bias) combines with specific alcohol-related learning. Preparedness in this model denotes that even with risk factors of dysregulation and positive alcohol expectancies, alcohol abuse is not necessarily an automatic outcome; it implies that an individual is more likely to manifest alcohol problems given their loading of risk factors. The term acquired relates specifically to alcohol; dysregulation only becomes a risk factor for alcohol abuse if a dysregulated adolescent is exposed to alcohol-related learning (Smith & Anderson, 2001).

The acquired preparedness model has been tested extensively in the literature. Barnow et al. (2004) found that significant problem behaviors, including aggressive and delinquent conduct

problems, in a sample of adolescents was related to alcohol consumption (quantity and frequency) and mediated by alcohol expectancies. Additionally, alcohol consumption was positively correlated to peer delinquency (including substance use and aggression). This research study was based on an acquired preparedness model and the principal investigators concluded that alcohol expectancies, peer aggression, and substance use predicted quantity and frequency of adolescent alcohol use. Likewise, another study among young adult females examined the relationship between dysregulation, psychosocial learning, and marijuana. Results supported an acquired preparedness model where positive substance use expectancies mediated the relationship between dysregulation and marijuana use (Hayaki et al., 2012). This study also evaluated multiple outcomes including perceived problem severity and a measure of marijuana dependence and asserted self-efficacy as a learning principle. The acquired preparedness model also appears relevant for adolescents who are high in trait dysregulation and may learn reinforcing aspects of risky behaviors more strongly than punishing aspects. Thus, this model may be applied to other types of problem behavior that may be associated with alcohol abuse such as RSB. Research does show that adolescents who are high on dysregulation and who hold strong, positive alcohol expectancies may benefit the most from expectancy and behavioral interventions (Thatcher & Clark, 2008).



*Figure 1.* Acquired preparedness model of risk. Trait of dysregulation shapes development of expectancies that influence engagement in problematic alcohol use.

## **Motivational Interviewing Approach**

**Underlying processes.** Motivational Interviewing (MI) is a client-centered therapeutic style with the goal of examining and resolving change-related ambivalence about personal behaviors that may have negative consequences (Miller & Rollnick, 2002). This style of therapy emphasizes examining and reinforcing intrinsic motivation to reduce problematic behaviors and increase healthy ones while at the same time supporting one's autonomy and decision-making. The foundation of MI is based on four major tenants. At its core, MI is a client-centered treatment. Based on work from Carl Rogers, MI does not focus on teaching coping skills, reshaping cognitions, or examining the past (Miller & Rollnick, 2002). Rather, it is focused on the individual's current interests and concerns; an exploration of discrepancies are based on incongruities from that individual's own experience and value system. Secondly, although MI is client-centered it is not non-directive. During MI, the clinician intentionally addresses ambivalence to elicit and influence conversations about change while diminishing resistance. Third, MI is not just a set of techniques, but rather a method of communication that evokes intrinsic motivation to change. The authors emphasize that MI is "not a bag of tricks" but instead "fundamentally a way of being with and for people" (Miller & Rollnick, 2002, p. 25). Next, the elicitation of intrinsic motivation to change is inherently different than other motivation strategies that impose change by extrinsic force (i.e., the law, punishment, social gain). Lastly, MI focuses on examining and resolving ambivalence in order to facilitate change and it is these processes that sustain behavioral change. The authors do not believe that true change occurs outside of an individual's own values and belief system, but instead that change happens in relation to one's own values (Miller & Rollnick, 2002).

By virtue of its collaborative, non-confrontational nature, MI has been cited as a promising treatment for adolescent substance abusers (Macgowan & Engle, 2010). Youth who

abuse substances usually enter treatment with a lower level of motivation than adults and typically have not experienced ongoing, long-term consequences of alcohol use and therefore do not view his or her drinking as problematic (Morehouse, 1989). MI strategies have been found to be particularly effective interventions for adolescent substance abusers due to this low motivation for treatment (Miller, 1996). However, research studies examining MI interventions among adolescents have demonstrated mixed results. A recent meta-analytic review with adolescents showed that out of 39 studies examined, 13 trials (34%) did not demonstrate reductions in substance use (Barnett, Sussman, Smith, Rohrbach, & Spruijt-Metz, 2012). Most of the interventions were done individually rather than in a group format and results did not show significant difference between interventions that used feedback. The reviewers explain this difference in effectiveness by concluding that there remains considerable room to examine the efficacy of various research designs and mechanisms of change for MI interventions implemented in adolescent samples.

Although there is some discrepancy in effectiveness of MI with adolescents, it is still an intervention worth exploring since it does reduce significantly harmful activities and problem behaviors. Additionally, interventions based on theory need to be tested and explored to determine which research designs and mechanisms of change target reductions in substance use the best. Winters, Fahnhorst, Botzet, Lee, and Lalone (2012) evaluated a brief MI intervention for 315 adolescents and their parents in a school setting to reduce abuse of alcohol and drugs and found that both intervention conditions (adolescent-only versus adolescent and parent session) demonstrated significant reductions in drug use behaviors compared to the control condition. Likewise, another brief MI intervention for adolescents (N = 726) who presented in the emergency department of an urban hospital were randomized to a therapist or computer-based



intervention. Six-month outcomes demonstrated that participants in both of the intervention conditions had significant reductions of alcohol consequences compared to those in the control group. The therapist intervention also showed significant decreases in peer aggression (Cunningham et al., 2010). This study demonstrated that a brief, thirty-minute intervention delivered in a hospital setting can significantly reduce risk behaviors that are the leading cause of mortality and morbidity in adolescence. These two research studies, conducted in different settings, show promising results for an extremely brief MI intervention for youth. Future research should continue to examine different avenues to implement brief MI interventions for adolescents who are at increased risk for substance use related consequences in order to address the public health problems related to these behaviors.

**Values.** Miller and Rollnick (2002) briefly address the role that value systems play in decision-making and behavior. The authors acknowledge that MI works because discrepancies between current interests and behaviors are incongruent with one's own experience and value system. Throughout the tenants associated with MI, values are inherently addressed but never specifically noted. Yet, it is these value systems that motivate an individual to engage in any type of behavior, whether maladaptive or adaptive, and it is vital to recognize its role in choices associated with engaging in risky behaviors.

Rokeach's (1973) seminal work addressed the role of values in decision-making and behavior. He proposed that values are a unique psychological construct that prompts decision-making and behavior for an individual. He was able to conceptualize values as core facilitators of behavior and differentiate them from other psychosocial variables by viewing them as abstract drivers of behavior. Subsequently, Rokeach operationalized a theoretical definition of values: "A *value* is an enduring belief that a specific mode of conduct or end-state of existence is personally

or socially preferable to an opposite or converse mode of conduct or end-state of existence” (Rokeach, 1973, p. 5). Since this initial operational definition, several authors have added to its description. Cheng and Fleischmann (2010) using multiple different conceptualizations reached their own summation, “values serve as guiding principles of what people consider important in life” (p. 3). This definition is comprised from a multitude of authors (Braithwaite & Blamey, 1988; Guth & Tagiuri, 1965; Hutcheon, 1972; Schwartz, 1994) who have explored the importance of values and believe that it is this underlying construct that individuals regard as desirable and guide decisions that later drive behavior. The notion that values motivate individual decision-making, which then guides behavioral choices, has been widely accepted in the literature. Additionally, values are considered a key precursor and interpretative factor in evaluating human and social dynamics (Schwartz, 2007).

Several current research studies have demonstrated an association between values and other risky problem behaviors such as cigarette smoking (Conroy, 1979), alcohol and drug use (Toler, 1975), and engagement in sexual behaviors (Chernoff & Davison, 1999). Toler’s (1975) original research suggested that the values important to individuals who abuse alcohol and drugs are different than the general population. The author found that the general population valued societal goals where, by contrast, the drug-abuse group valued personal goals such as “an exciting life”. Chernoff and Davison (1999) designed an experiment to investigate the relationship between value systems and RSB in a sample of 761 adolescents and young adults. Specifically, the authors examined if higher-risk sexual behaviors were related to a significantly different set of values than lower-risk behaviors. The study’s theoretical underpinnings were grounded in Rokeach’s (1973) work that an individual’s underlying core value system is relatively stable, discrete, measurable and capable of being ranked in order of personal

importance. Results indicated that values differ in three distinct, observable areas. Higher risk behavior was correlated to valuing excitement, stimulation, and the undervalued construct of self-control. RSB was inversely associated with values associated with concern and responsiveness to the welfare of others. The authors proposed that future research examine risk-taking, impulsivity, and sensation-seeking to see if these psychological constructs correlate with these value priorities and behavioral patterns (Chernoff & Davison, 1999).

**Personalized feedback interventions.** MI inherently highlights discrepancies between behavior and attitudes while enhancing motivation for behavior change. Brief motivational interventions that include personalized alcohol use feedback are usually referred to as Motivational Enhancement Therapy (Miller, Zweben, DiClemente, & Rychtarik, 1995) and is commonly studied among college-aged drinkers (Martens, Smith, & Murphy, 2013). Social norms approach (Perkins & Berkowitz, 1986) indicates that behavior is influenced by inaccurate perceptions of how others in our relative social groups think and behave. Specifically, this approach predicts that an overestimation of others' problem behavior will increase one's own problem behavior and that an underestimation of others' healthy behaviors will decrease one's own probability of engaging in these same behaviors. According to this theory, correcting misperceptions of group norms would result in decreased problem behavior or increased healthy behaviors. When applied to adolescents, research suggests that peers have considerable influence and are based more on what an individual believes others to be doing (perceived norm) than on real beliefs and behaviors (actual norm). The gap between the perceived norm and the actual norm is referred to as a misperception. One effective way to correct this information in a believable way is through personalized feedback interventions (Cadigan, Haeny, Martens, Weaver, Takamatsu, & Arterberry, 2015; White, 2006).

Personalized feedback interventions (PFIs) are used to correct misperceptions between perceived norms and actual norms to reduce perceived peer pressure and increase the probability that individuals will express pre-existing attitudes and values that are health conscious and promoting. Typically used with college-aged students, PFIs provide individuals with feedback about their own alcohol use relative to college norms, other components of risky drinking behavior, and related consequences (Dimeff, Baer, Kivlahan, & Marlatt, 1999; White, 2006). PFIs work by the participant first completing a series of questionnaires on his or her drinking habits, which are then compared to national norms of drinking among that age group. If feedback is delivered in person then the information is reviewed in a one-on-one meeting with a clinician. Specifics of the feedback vary between studies contingent on the focus and intent of the research, but common elements included are social norms information, alcohol-related risks based on the individual's drinking behaviors, a summary of alcohol-related consequences experienced, money spent on alcohol, caloric intake from alcohol, and alcohol-related expectancies (e. g., Neighbors, Larimer, & Lewis, 2004; Walters, Vader, Harris, Field, & Jouriles, 2009). The purpose of feedback is to highlight the participant's current problematic alcohol use, help increase discrepancies between actual and perceived behaviors, and address ambivalence about behavioral change (Martens, Smith, & Murphy, 2013).

Researchers have evaluated the effectiveness of PFIs and have demonstrated that correcting one's normative misperceptions of others' problem behavior has resulted in a reduction of one's own risky behavior. Doumas and Andersen (2009) evaluated a web-based PFI at a large university to reduce heavy drinking among first year students. The program itself took 15 minutes to complete and participants received immediate personalized feedback without components of psychoeducation or an alcohol-specific intervention. Results confirmed that first

year high-risk heavy drinkers in the feedback condition had reductions in alcohol consumption and related problems significantly greater than participants in the control group. Particularly, this group of students reported a 30% decrease in weekly quantity of alcohol consumption, 20% decrease in frequency of binge drinking, and 30% reduction in alcohol-related consequences. The control group, who did not receive feedback, had an increase in all three of these domains: 14% increase in weekly drinking quantities, 16% increase in frequency of binge drinking, and an 84% increase in alcohol-related consequences. The results from this study are consistent with the body of literature indicating that PFIs are effective in reducing problematic heavy episodic drinking in college students even when delivered via a web-based program (Bersamin, Paschall, Fearnow-Kenney, & Wyrick, 2007; Kypri et al., 2004; Walters, Vader, & Harris, 2007).

Doumas and Anderson's (2009) study was not the first to feature computer-delivered PFI, and there has been considerable research aimed at investigating its effectiveness compared to face-to-face clinician PFI. There have been some mixed results of computer-delivered PFIs, delivered in both laboratory and web-based settings, with some researchers finding that they are just as effective as face-to-face PFIs (Kypri et al., 2004; Neighbors, Larimer, & Lewis, 2004; Walters & Neighbors, 2005) and others finding that face-to-face PFIs are more efficacious (Wagener, et al., 2012; Walters et al., 2009). Face-to-face PFIs demonstrate a small, but consistent trend, producing larger effects than computer-based interventions and greater effects over time (Cadigan et al., 2015). However, computer-based PFIs are still effective and offer some unique advantages that face-to-face sessions cannot. Since personalized feedback is used to address misperceptions of others' and one's own risky behavior it has been found that adolescents prefer assessment and feedback via a computer. Additionally, computer-based interventions allow participants to pace themselves, are efficient, allow for anonymity, are cost-

effective, and can be designed to be attractive and engaging (Elliot, Carey, & Bolles, 2008; Kypri, Saunders, & Gallagher, 2003). Although there are varying results in the degree of effectiveness between computerized PFI and face-to-face PFI, the literature suggests that both intervention techniques reduce quantity and frequency of alcohol use and related consequences (Barnett, Murphy, Colby, & Monti, 2007; Bersamin, Paschall, Fearnow-Kenney, & Wyrick, 2007; Cadigan et al., 2015; Walters, Miller, & Chazzan, 2005).

### **Integrating Acquired Preparedness Model and Motivational Interviewing Approach**

**Values clarification as an intervention tool.** Although MI acknowledges the significance of an underlying value system in determining future behavior, this therapeutic style does not currently integrate a tool to evaluate values and its effect on behavioral change. Since MI is the gold standard in motivating behavior change in substance using populations, it is necessary to incorporate its tenants of collaboration and non-confrontation to gain client rapport. Specific tools such as personalized normative feedback help drive change and an added element of values clarification would bolster this efficacious intervention tool. Additionally, previous research (i.e., Chernoff & Davison, 1999) has called for value systems to be examined among populations engaging in problematic risk behavior by focusing solely on psychological constructs such as dysregulation and sensation-seeking. The acquired preparedness model combines the two risk factors of dysregulation and alcohol expectancies to create a model that leads to alcohol abuse problems. Moreover, most value systems are developed through prior learning experiences and social interactions with family and peers; any influential person in a child's life can create a meaningful impression that can impact his or her value structure (Zastrow & Kirst-Ashman, 2004). The combination of dysregulation and learning experiences, in

the form of expectancies and values, augments the acquired preparedness model. Utilizing this model while integrating an added element of values clarification, according to the literature, appears to be an effective way to intervene and reduce risky behaviors initiated by dysregulation and learned expectancies.

A values clarification intervention orients an individual to consider what is personally desirable and worthwhile in life. Unclear value systems can lead to inconsistent behavior that is not guided by clear motive. According to Zastrow and Kirst-Ashman (2004), decisions, even common, everyday choices, are embedded in beliefs about the value of life, freedom, and protection. Clarification of values refers to any process that assists an individual in discovering and refining their personal value system (Brandler, 1999). Subsequently, once values are clearly defined, the literature proposes that individuals will make efforts to adjust behavior to be congruent with the values they have clarified to be most important. For adolescents, values clarification is a tool that focuses on helping them illuminate the importance of building a life worth living and working toward (Brandler, 1999; Santrock, 1998). Accordingly, values seem to be an integral component to the formation of behavioral patterns and it is reasonable to assume that value awareness may drive behavioral change. Additionally, Raths, Harmin, and Simon (1966) proposed that it may not necessarily be the content of an individual's values, but rather the process itself of attending to, organizing, and defining a value system, that promote change.

A pilot project by Edwards and Allen (2008) examined the use of values clarification in a group setting with delinquent, pregnant teenage girls as a means to change attitudes and subsequent behavior. Values clarification was conceptualized as a process to encourage reflection of life experiences, personal attitudes, and behavioral patterns among participants. The authors hypothesized that routinized behavioral patterns are grounded in set values; similar

to the acquired preparedness model that asserts the role of learned expectancies in later risk-taking behavior. The researcher's hypothesis that an "erratic, inconsistent, irrational, destructive, and/or self-depreciating behaviors are related to the absence of a well-defined value system" (p. 2) was also meaningful. By defining a coherent value system, behaviors were expected to become consistent instead of impulsive and destructive. The study was designed not to address problematic behavioral patterns, but rather on the development of distinct and coherent value sets. This study is clinically significant because it demonstrates that youth who engage in problem behaviors can experience significant changes in their value system by modifying current values into a more cohesive value set that is consistent with attitudes, behaviors, and morals. The cognitive process involved in evaluating values may lead to the adoption of a more positive value system that can impact changes in attitudes and behaviors.

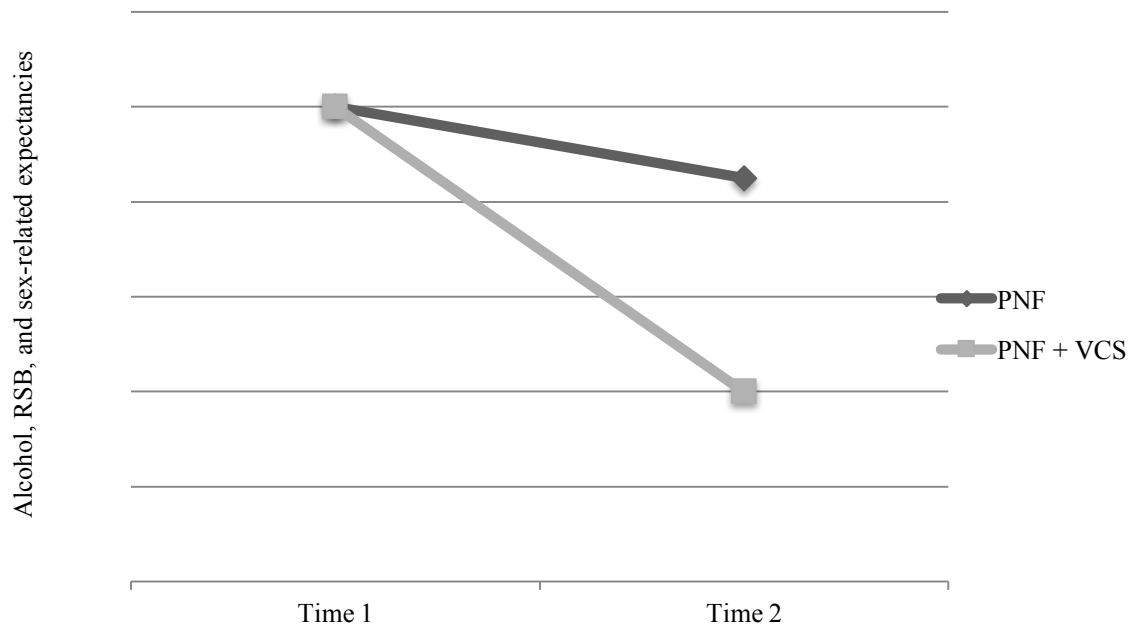
### **The Current Study**

This study will augment current research that examines brief interventions focused on decreasing problematic behavior in underage youth. This study examines the efficacy of a values card sort intervention tool to explore outcomes of expectancy and behavioral change among underage youth. Participants were randomly assigned into either the treatment as usual group (personalized normative feedback) or the experimental group (personalized normative feedback and values card sort) and received their assigned intervention during an in-person session. To assess efficacy, outcomes from the values card sort group were compared to the treatment as usual group at 4-week follow-up. Additionally, the relationship between dysregulation, alcohol and sex-related expectancies, and associated alcohol and risky sexual behaviors was examined in the context of an acquired preparedness model. Based on previous findings and theory, the below hypotheses were formulated (see Figure 1-2):

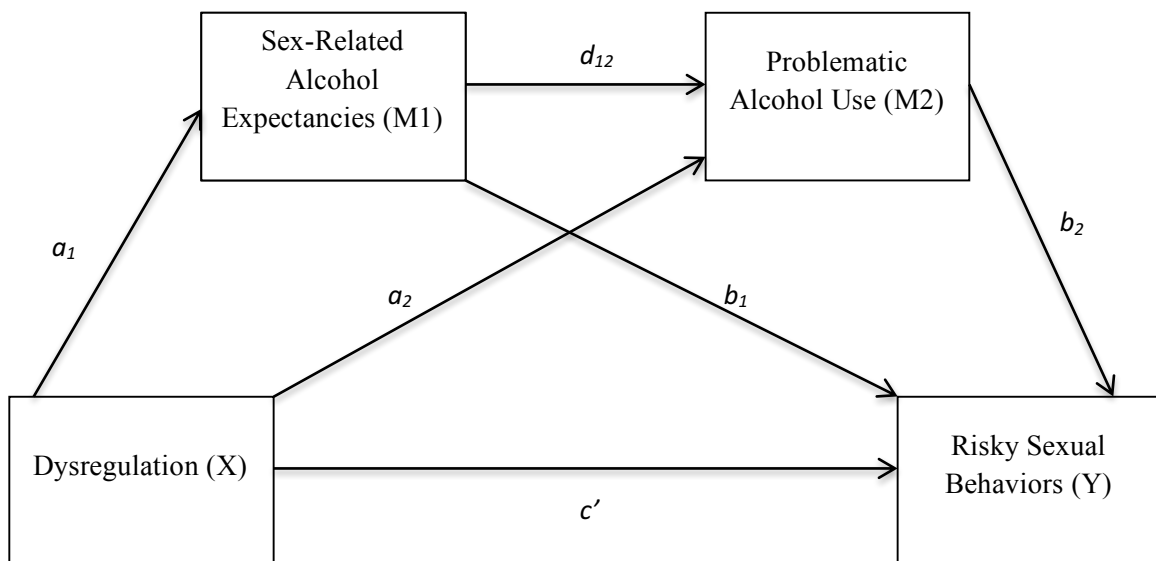


**Hypotheses.**

1. Participants in the experimental group (VCS) will have greater reductions in alcohol use, RSB, and positive sex-related alcohol expectancies compared to the treatment as usual group (TAU).
2. Elevated dysregulation will predict positive sex-related alcohol expectancies ( $a_1$ ).
3. Positive sex-related alcohol expectancies will predict increased risky sexual behavior ( $b_1$ ).
4. Elevated dysregulation will predict increased problematic alcohol use ( $a_2$ ).
5. Increased problematic alcohol use will predict increased risky sexual behavior ( $b_2$ ).
6. Positive sex-related alcohol expectancies will predict increased problematic alcohol use ( $d_{12}$ ).
7. Sex-related alcohol expectancies and problematic alcohol use will mediate the pathway from dysregulation to risky sexual behaviors ( $c'$ ).



*Figure 2.* An illustration of the proposed experimental model (Hypothesis 1). Alcohol, RSB, and positive sex-related expectancies will have greater reductions in the experimental group (VCS) than in the treatment as usual group (TAU).



*Figure 3.* Proposed serial multiple mediation model (Hypotheses 2-7). Sex-related alcohol expectancies and problematic alcohol use mediate the relationship between dysregulation and risky sexual behaviors.

## CHAPTER II

### Method

#### **Sample and Participant Selection**

**Participants.** Participants included underage drinkers aged 14-20 recruited to participate in Project PIVOT: Personalized Intervention with Values Orientation for Teens. For the current study, data were collected from August 2015 through April 2017. See Table 1 for demographics of the current study sample. For eligibility, individuals were screened to meet inclusion criteria of endorsed alcohol use within the last year and a sexual experience within the last year. Participants met age requirements of at least 14 years old since parental consent is not required in the state of Washington from clients 13 years old or older (RCW 71.34.530). Adolescents also have the right to consent to birth control and abortion services (RCW 9.02.100), and outpatient substance abuse services (RCW.96A.096,230). However, youth must be at least 14-years-old to consent to sexually transmitted infections and testing (70.24.110). Exclusion criteria included any youth younger than 14-years-old in order to capture those adolescents who may be seeking testing or treatment related to sexually transmitted infections.

Table 1. *Study Sample Demographics*

Demographic Variable	Percent (N = 38)
Age	
14	2.6
15	2.6
16	2.6
17	2.6
18	50.0
19	16.3
20	13.2
Academic Setting	
High School	15.8
College	84.2
Gender	
Male	23.7
Female	76.3
Ethnicity	
Caucasian	42.1
African American/Black	5.3
Hispanic/Latino	15.8
Asian American/ Asian	21.1
Multiethnic	15.8

**Recruitment.** Participants were recruited from a health care site that served an exclusive adolescent population housed within a high school and at a private university. At the health center, primary physicians and/or psychologists who see youth for substance abuse or reproductive health concerns screened adolescents during their health visit and offered information about Project PIVOT. Interested adolescents signed a release of information (ROI) so that the researcher could contact them about the study. The interventionists were in touch with the health centers to pick up referrals and interested participants were contacted and screened with relevant questions to assess for eligibility. If the youth did not meet eligibility criteria, they were provided additional resources related to reproductive planning and decision-making. If interested, they were referred to the substance abuse counseling program at their high school. Eligible participants set up a day and time during the school day to meet with the interventionist.

Participants recruited at the university were recruited in one of two ways: either through their undergraduate psychology classes or via flyers placed around campus. Those students that were enrolled in undergraduate psychology classes signed up for the research study through the online undergraduate psychology pool. They were informed of study eligibility through the online portal and were screened again via email once they signed up for the study. Those that were recruited via flyer, contacted the site coordinator via email and were screened for eligibility. Once eligibility was confirmed, interventionists confirmed the date and time of their first session. If the student did not meet eligibility criteria, they were provided additional resources related to reproductive planning and decision-making.

Regarding parental consent for youth under 18, Institutional Review Board (IRB) approval from Seattle Pacific University was sought to waive parental consent under federal regulation 45CFR46.116. This regulation states that parental approval can be waived under certain circumstances including: 1) when the research involves no more than minimal risk; 2) when the waiver or alternation will not adversely affect the rights and welfare of the participants; 3) when the research could not be practicably carried out without the waiver; 4) when appropriate, subjects will be provided with additional relevant information about participation. Conditions that met these circumstances were articulated to the IRB under the scope of the current project.

### **Assessments and Measures**

**Alcohol consumption.** The Customary Drinking and Drug Use Record (CDDR; Brown et al., 1998) is used to assess alcohol and other drug use patterns (quantity/frequency), withdrawal and dependency symptoms, and substance-related consequences. This scale includes DSM-III-R and DSM-IV criteria-based questions for substance abuse, dependence, and

withdrawal. It is also designed to assess both recent and lifetime patterns of substance use. The current study is primarily interested in the subscale of the CDDR that assesses for alcohol abuse and dependence, which includes items that address quantity/frequency of alcohol use. In previous studies, the CDDR has had strong internal consistency for this subscale; alpha coefficients for alcohol and drug dependence among abusing samples of adolescents were  $\alpha = 0.89$  and  $0.72$  respectively, and community samples of adolescents were  $\alpha = 0.78$  and  $0.85$  respectively (Brown et al., 1998). The CDDR also collects demographic information such as age, gender, race/ethnicity, height, and weight. The current study will only use items that referred to quantity/frequency of alcohol use. This variable was calculated by multiplying the quantity of alcohol consumption by the frequency of alcohol consumption. Additionally, because we utilized a quantity/frequency behavioral count of substance use, reliability statistics were not calculated.

**Alcohol consequences.** The Rutgers Alcohol Problem Index (RAPI; White & Labouvie, 1989) is a 23-item self-administered screening tool used to assess for adolescent problem drinking. This measure was specifically developed to create a relatively brief and easily administered tool to assess for problematic alcohol consumption in adolescents. Respondents rate agreement with each statement on a 4-point Likert scale from *none* (0) to *more than five times* (3). The total score of the assessment can be used as an interval-level dependent or independent variable to study predictors of consequences related to problematic drinking among adolescents. The prompt at the beginning of the measure, “How many times has this happened to you while you were drinking or because of your drinking during the last year” can be changed to address different time frames as designated by the research design (four weeks at Time 2). At baseline, questions will capture behaviors in the last year and at follow-up questions will address behaviors in the last four weeks. Sample items include: “Went to work or school high or drunk”,

“Had a fight, argument, or bad feeling with a friend”, “Felt physically or psychologically dependent on alcohol”. A factor analysis was conducted of test-retest data including frequencies of a total of 53 symptoms and/or consequences of alcohol use in a nonclinical sample of 1308 adolescents. The final 23-item scale was found to have a reliability of 0.92 and a three-year stability coefficient of 0.40 for the total sample (White & Labouvie, 1989). For the current study, the scale evidenced an alpha coefficient of 0.82.

**Risky sexual behaviors.** Risky sexual behaviors were assessed using a set of questions adapted from a survey created by Duncan, Strycker, and Duncan (1999) and Lewis, Lee, and Patrick (2007) and reflects other similar empirically validated measures of RSB (Schroder, Carey, & Vanable, 2003; Walsh, Danielson, Sales, Brown, Wingood, & DiClemente, 2012). Research suggests two appropriate ways of assessing for RSB, which include either frequency measures (behavior counts) or relative frequency measures (e.g., Likert scales). In this study, behavioral counts will be used to assess for sexual behavior since relative frequency measures do not yield data regarding the absolute frequency of sexual intercourse (Schroder, Carey, & Vanable, 2003). Four items from Duncan, Strycker, and Duncan will be used regarding sexual behaviors: (1) number of partners in the last year, (2) intercourse in the past year with someone not well known, (3) intercourse in the last year with a person who injects drugs, and (4) consistency of condom use. Age of first sexual experience has been well documented in the literature to be a significant predictor of concurrent and future problem behaviors (Leitenberg and Saltzman, 2000; Martin et al., 2005) and will also be included in the measure. Additionally, questions will be asked both in terms of when the participant was sober and when they were under the influence of alcohol.



The first questions will ask participants the age of first sexual intercourse, lifetime number of partners, and number of partners in the last year. As adapted by Lewis, Lee, and Patrick (2007) the remainder of the questions will include the number of times the participant has had sex and ask how many times they have engaged in a certain behavior out of the provided quantity. The participant will be asked three questions related to sober sexual activity: “You said you had sex \_\_\_\_ time(s) in the past year. Of the \_\_\_\_ time(s), how many times did you have sex with someone you didn’t know very well?” The ending of this question will change to reflect “how many times did you have sex with a partner who injects drugs” and “how many times did you use a condom”. Participants’ will then respond to questions related to both sex and alcohol use: “You said you had sex \_\_\_\_ time(s) in the past year. Of the \_\_\_\_ time(s), how many times did you drink alcohol before or during the sexual encounter?” Following questions will ask about the first set of behaviors but in terms of alcohol consumption before or during sexual experiences, “You said you had sex \_\_\_\_ time(s) in the past year while drinking alcohol. Of the \_\_\_\_ time(s), how many times did you have sex with someone you didn’t know very well?” The ending of these questions will again reflect sex with a partner who injects drugs and frequency of condom use. At follow-up the time frame will change from “the past year” to “in the last month” to capture new behaviors from baseline data collection.

**Dysregulation.** The UPPS-P scale measures five dimensions of impulsivity: negative urgency (acting impulsively under negative affect), lack of premeditation (difficulties planning and considering consequences), lack of perseverance (poor ability to remain focused), sensation seeking (tendency to seek out dangerous or exhilarating activities), and positive urgency (tendency to act impulsively under intense positive affect) (Whiteside & Lynam, 2001). This study uses a 20-item abbreviated inventory of the original 59-item measure (Billieux et al.,

2012). Items are rated on a Likert scale from 1 (“I strongly agree”) to 4 (“I strongly disagree”) and there are 4 items per dimension. The short UPPS-P has shown good internal consistency with Cronbach alphas ranging from 0.70 to 0.84 for the various subscales (Billieux et al., 2012). An alpha coefficient of 0.81 was found in the current study.

**Sex and alcohol expectancies.** The Sex-Related Alcohol Expectancies Scale (SSAE; Dermen & Cooper, 1994) is a 13-item self-report questionnaire used to measure beliefs related to alcohol’s effects on sexual attitudes and behavior. This measure was developed for use with adolescent and young adult populations. Respondents rate agreement with each statement on a 6-point Likert scale from *strongly disagree* (1) to *strongly agree* (6). Three domains of sex-related expectancies are assessed and include: enhancement of sexual experience (5 items), increased sexual risk-taking (4 items), and disinhibition of sexual behavior (4 items). Sample items include: “After a few drinks of alcohol I am more sexually responsive” (enhancement of sexual experience), “After a few drinks of alcohol I am less likely to use birth control” (increased sexual risk-taking), and “After a few drinks of alcohol I am more likely to have sex on a first date” (disinhibition of sexual behavior).

The SSAE data was fielded with 916 adolescents residing in a large north-Atlantic city who responded to a random-sampling of digit-dial techniques of home phones. The age of participants ranged from 13 to 19 years old with a mean age of 17.8 years and 52.6% were male. Drinking and sexual intercourse were assessed through structured interview schedules and included: drinking alcohol within the past 6 months (90%) and engaging in sexual intercourse within the last 6 months (90%). The average number of drinks reported was 6.9 per week. An exploratory factor analysis was conducted and three factors were extracted with eigenvalues greater than 1. Confirmatory factor analytic techniques were then tested and the authors looked

at two plausible models: a single-factor model and the modified, correlated three-factor model. The results were cross-validated by the best-fit model for invariance across subsamples. The chi-square difference test found that the modified, three-factor model was a significantly better fit than the one-factor model and provided an acceptable goodness of fit (NFI = .92, CFI = .94) with the domains being moderately intercorrelated. Internal consistency was demonstrated as satisfactory with alpha coefficients ranging from .70 to .83 across the three domains. These reliability findings have been supported in similar research (Hendershot, Magnan, & Bryan, 2010; Pumphrey-Gordon & Gross, 2007) and the current study found an internal consistency of 0.87.

## **Procedure**

**Random assignment.** Participants were randomly assigned to either the treatment as usual group (personalized normative feedback) or the experimental group (personalized normative feedback and value card sort). The control group received treatment as usual in the form of PNF instead of being an assessment only condition due to the high-risk nature of the behaviors under examination. The treatment as usual group equalizes the two conditions on the expectations of benefits. A random number generator was used to assign a participant number to youth once they were deemed eligible for participation and designated which treatment intervention they received.

**Baseline and follow-up procedures.** Once the participant was assigned a participant number, the interventionist scheduled a time to meet during the day. Interventionists had at least four hours of direct MI training and their adherence to MI was previously measured by the Motivational Interviewing Treatment Integrity (Moyers, Martin, Manuel, Hendrickson, & Miller, 2005) through the scope of an earlier, larger project, and adherence was found acceptable (.81-

.87). The intervention was provided on school days in a private office on site of where the youth was recruited. Participants were informed of the details of the study by the interventionist and were provided with informed consent. They spent 15-20 minutes completing a web-based baseline questionnaire on Qualtrics including demographics, dysregulation questions, sex and alcohol behaviors, and sex-related alcohol expectancies. The interventionist was available to answer any questions and to assist during more complicated questionnaires such as helping understand how to appropriately count alcohol use. When finished, the participant then completed activities related to their designated group assignment (see below). After completion, participants at the high school sites scheduled a follow-up meeting four weeks later. The interventionist contacted and reminded the participant of this meeting the day before the second appointment. Participants at the university site were emailed their follow-up survey four weeks after the initial meeting. At Time 2, participants completed follow-up questionnaires including sex and alcohol behaviors and sex-related alcohol expectancies. All participants received a ten-dollar gift card for participation and entered a raffle to win a \$50 gift card. Youth at the university site also received class credit for their participation if they signed up through the undergraduate psychology portal.

**Values card sort.** At the end of the baseline survey, participants in the randomized experimental group completed a values card sort with the interventionist. The Teen Values Card Sort was adapted from the Personal Values Card Sort (Miller, C'de Baca, Matthews, & Wilbourne, 2001). The original card sort was created as a tool to encourage discussion between the therapist and client about significant values and goals in the client's life. It is based on research that indicates discrepancies between values and current behaviors can be effective

motivators toward behavioral change (Maio, Olson, Allen, & Bernard, 2001; Torelli & Kaikati, 2009).

The instructions of The Teen Values Card Sort used in this study combined instructions from Miller et al. (2001). Participants were asked to sort through 27 cards that list different values and place them into three piles: “Very Important to Me”, “Important to Me”, and “Not Important to Me”. The values listed on the cards range from “Helpful to My Peers” to “Competent and Respected at School” to “Spiritual”. Once finished with this initial step, the participant was asked to sort through the “Very Important to Me” values stack, and decide on three to five values that he or she would say were the absolutely most important values in his or her life. The interventionist then asked the participant, “What I’d like you to do now is take each of those and tell me whether you think what’s going on in your life now, or with your drinking, is having a positive/negative/or neutral impact on that value. Does that sound okay?” The interventionist and participant spent ten minutes discussing the listed values and its relevancy to his or her alcohol use or sexual behavior. This conversation was done in a motivational interviewing style in order to maintain empathy, create discrepancies, and roll with resistance (Miller & Rollnick, 2002).

**Personalized normative feedback.** Participants in the treatment as usual condition were routed to view their personalized normative feedback after completing baseline assessments. Participants in the experimental condition viewed their feedback after finishing the Teen Values Card Sort with the interventionist. Personalized normative feedback included information regarding one’s own behavior, comparison of drinking and sex to age-based norms, and blood alcohol content compared to norms from the Youth Risk Behavior Surveillance Survey and the National Survey on Drug Use and Health from SAMHSA (CDC, 2014b; Center for Behavioral

Health Statistics and Quality, 2016). The information was directly taken from the participants' previous responses on baseline assessments and represented in text, graphs, and checklists. The bar graphs were individually tailored to the participants' data so that the scale on the y-axis is dependent on the values provided by the participant. Screen formatting and style were the same across the two conditions and only the specific information provided by the participant varied. The participant spent ten minutes navigating through feedback. They were instructed at the beginning of the PNF to ask the interventionist questions at any time, although, it was not required that they do. The participant had the option to have their personalized feedback emailed to them in a PDF.

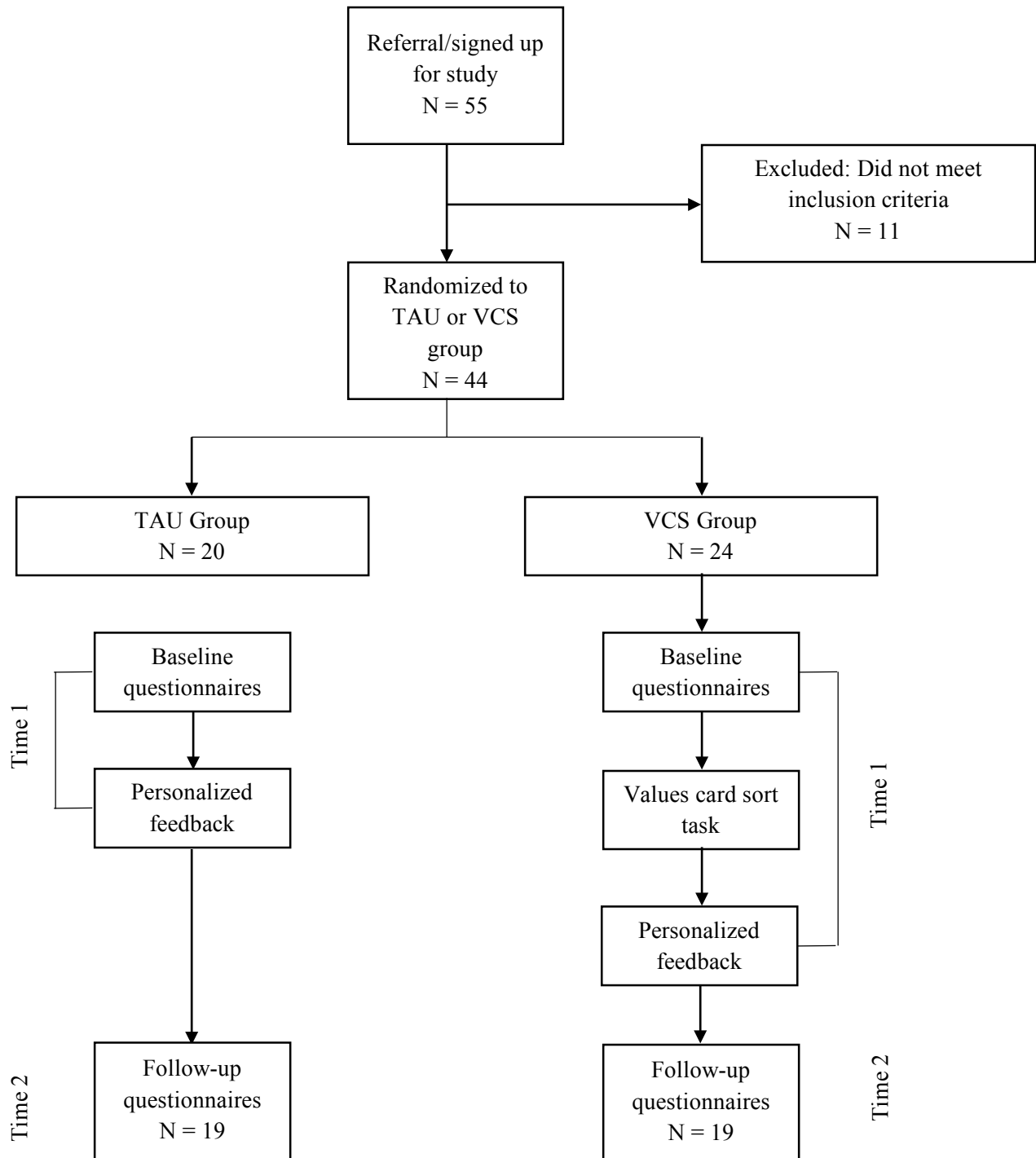


Figure 4. Intervention flowchart

## CHAPTER III

### Results

#### Power Analysis

An a priori power analysis was conducted to determine adequate sample size necessary using the statistical software G\*Power (Faul, Erdfelder, Lang, & Buchner, 2007). Two separate analyses were run to determine the power for both the proposed experimental model and the serial meditational model. The meditational model was determined by a fixed linear multiple regression design with a total of four predictor variables (1) dysregulation predicting risky sexual behaviors, (2) sex-related alcohol expectancies predicting risky sexual behaviors, (3) alcohol consumption predicting risky sexual behaviors, and (4) dysregulation predicting risky sexual behaviors, mediated by sex-related alcohol expectancies and alcohol. To determine a moderate effect size,  $f^2$  effect size was set to .15, alpha level was set to .5, and power was set to .80 (Cohen, 1992). Next, a MANOVA repeated measures design was run to determine sample size for the experimental model based analyses. This analysis included the treatment as usual group (personalized normative feedback) and the experimental group (personalized normative feedback and values card sort). It also included the three measures (1) alcohol behaviors, (2) sex behaviors, and (3) sex-related alcohol expectancies. Again, for a moderate effect size,  $f^2$  was set to .15, power was set to .80, and alpha level adjusted to .5. Based on these criteria for the two models, results specified a minimum of 85 participants to adequately power the proposed serial meditational hypotheses and 74 participants for the longitudinal intervention analyses. A total of  $n = 55$  youth were recruited for the study. Of those, 11 were deemed ineligible due to age or because they had not used alcohol or engaged in sexual intercourse in the last year. A total of  $n = 44$  participants were randomly assigned and  $n = 38$  participants completed both time points of the study.



Table 2. *Sample Sizes Required for Given Effect Sizes of Mediation Model*

	<u>Effect size</u>	<u><math>\alpha</math></u>	<u>Power (1- <math>\beta</math>)</u>	<u>Predictors</u>	<u>Sample Size</u>
Small	.02	.05	.80	6	602
Medium	.15	.05	.80	6	85
Large	.35	.05	.80	6	40

Table 3. *Sample Sizes Required for Given Effect Sizes of Longitudinal Model*

	<u>Effect size</u>	<u><math>\alpha</math></u>	<u>Power (1- <math>\beta</math>)</u>	<u>Groups (measures)</u>	<u>Sample Size</u>
Small	.02	.05	.80	2(3)	4016
Medium	.15	.05	.80	2(3)	74
Large	.35	.05	.80	2(3)	16

### Data Entry

Data were collected using the online survey tool Qualtrics and downloaded into the Statistical Package for the Social Sciences (SPSS) Version 24 software. Before statistically analyses were run, data were examined for outliers using standardized scores and box plots for continuous measures. A few cases of extremely high alcohol use and sexual behaviors were noted and are not uncommon in behavioral count research (Schroder, Carey, & Vanable, 2003). To account for these cases of high skewness and kurtosis, alcohol use was square root transformed to maintain the ratio of the outcome value. Sexual behaviors were transformed into proportion scores so that each risk behavior (e.g., sex with strangers) was divided by the total number of sexual encounters reported.

The assumptions of multiple linear regression and repeated measures ANOVA were evaluated and addressed. These assumptions include linearity, normality, homoscedasticity, independence (only regression), multicollinearity, and sphericity (only ANOVA). Data were

considered normally distributed after examination on a transformation plot. Examining a scatter plot for residuals and predicted values assessed Homoscedasticity. Normality was examined by checking for skewness and kurtosis in a probability plot of the residuals and several variables, including alcohol quantity and frequency, sexual experiences, and condom use. They were determined to exceed specified parameters and were corrected as mentioned previously; alcohol and condom use was square root transformed and sexual behaviors were transformed into proportion scores.

The assumption of multicollinearity was assessed by examining the Variance Inflation Factor (VIF) and indicated the absence of multicollinearity. The Durbin-Watson statistic (Field, 2009) offers a test to check for violations of independence by checking for correlation in the residuals. However, it was expected to violate this assumption given the clinical nature of the study and repeated measures design. Lastly, in repeated measures design, data for different conditions come from the same variables and therefore data will be related and not independent. In this case, it is assumed that the relationship between pairs of experimental conditions were similar, which is referred to as sphericity. To check this assumption, Mauchly's test statistic was examined and because of its significance the condition of sphericity was not met.

The following variables were computed for both intake and follow-up at four weeks. Overall alcohol use was comprised by multiplying quantity of alcohol use (per sitting) by frequency of alcohol use (per month) and then taking a square root transformation. Alcohol consequences were calculated as a sum from the RAPI measure. Sex-related alcohol expectancies were computed by averaging the total SSAE score by number of items. Similarly, total dysregulation was also an average of the score of UPPS-P items. There was one total average score for dysregulation since the construct was collected only at baseline. Items from

Duncan, Strycker, and Duncan (1999) were used to calculate a total risk proportion score for sexual behaviors. Intercourse when drinking, having sex with a stranger, and unprotected condom use was summed and divided by the total number of sexual experiences reported. The item, “intercourse with a person who injects drugs” was not endorsed among any of the participants and was not included to calculate risk. Unprotected sex was computed by adding together variables of condom use when sober and while drinking, and then taking the square root transformation to adjust for skewness and kurtosis.

### **Descriptive and Preliminary Analyses**

Individuals between the ages of 14-20 were eligible to participate in the study. A total of 44 adolescents and young adults completed Time 1. A total of 38 participants completed the entire study. Retention rates between Time 1 and Time 2 was 86%.

The following demographics are supplied for the sample of students that completed the entire study. The average age of participants was 18.26 (SD = 1.25), 76% identified as female, 42% indicated they were Caucasian, and 84% of the participants were college-aged students. Twenty participants were randomly assigned into the treatment as usual group (TAU) with 24 participants in the experimental condition (VCS). Of the 20 assigned to the treatment as usual group, 19 completed the study. In the experimental group, 19 completed the study out of the 24 assigned. Analyses were run to determine if there were any significant differences between those who only completed T1 versus those who participated in both components of the study and no significant differences were found (Table 4).

Bivariate correlations were examined between study variables and grouped by gender. Variables included were age, age of first alcohol use, total alcohol use comprised of quantity times frequency, alcohol consequences as scored on the RAPI, age of first sexual intercourse,

unprotected sex, risky sexual behaviors, and dysregulation scores from the UPPS-P. Risky sexual behavior was a composite comprised of sex while drinking, sex with strangers, and non-condom use divided by total number of sexual experiences reported. See Table 5 for these correlations. Female age was significantly negatively correlated with alcohol consequences and dysregulation and positively correlated with unprotected sex. Age of first alcohol use for females was also negatively correlated with alcohol consequences, risky sexual behaviors, and dysregulation and positively correlated with age of first sexual experience. Alcohol consequences in females was positively correlated with risky sexual behavior, dysregulation, and sex and alcohol related expectancies and negatively correlated with age of first sexual experience. Lastly, sex-related alcohol expectancies was significantly correlated with risky sexual behaviors in females. In males, age of first alcohol use was negatively correlated with alcohol quantity and frequency and sex-related alcohol expectancies. Unprotected sex for both males and females in the sample was correlated with dysregulation, but in inverse directions, such that age of first intercourse in females was negatively correlated with dysregulation and age of first intercourse in males was positively correlated with dysregulation.

Preliminary analyses were conducted to determine if there were any significant differences between the two groups (TAU versus VCS). Descriptive statistics for demographic variables across group conditions are reported in Table 6, along with the results of the independent samples *t*-test by group (Table 7) and by academic setting (Table 8). There were no statistically significant group differences among the study variables. Examining differences between the high school and college groups, there was a statically significant difference of age of first alcohol use [ $t(36) = -2.27, p > .05$ ]. High school students ( $M = 14.17, SD = 1.17$ ) started drinking at a younger age compared to the college students in the sample ( $M = 16.09, SD =$

2.01). This finding can be attributed to a ceiling effects since it was not possible for anyone in the high school group to initiate drinking after age 18.

Table 4. *Variable Differences between Treatment Completers and Non-Completers*

Variable	<i>M (SD)</i>	<i>t</i>	<i>p</i>
Age First Use			
Treatment Non-Completers	15.20 (2.28)		
Treatment Completers	15.79 (2.02)	0.61	.55
Total Alcohol Use			
Treatment Non-Completers	4.68 (1.90)		
Treatment Completers	3.68 (2.27)	-0.94	.35
Alcohol Consequences			
Treatment Non-Completers	27.00 (1.87)		
Treatment Completers	29.08 (5.76)	0.79	.43
Age First Sex			
Treatment Non-Completers	15.80 (2.17)		
Treatment Completers	16.18 (1.72)	0.46	.65
Unprotected Sex			
Treatment Non-Completers	5.21 (6.02)		
Treatment Completers	2.71 (3.07)	-0.91	.41
Risky Sexual Behaviors			
Treatment Non-Completers	0.23 (0.27)		
Treatment Completers	0.23 (0.52)	0.01	.99
Dysregulation			
Treatment Non-Completers	2.23 (0.10)		
Treatment Completers	2.19 (0.39)	-0.47	.64
Sex Alcohol Expectancies			
Treatment Non-Completers	3.32 (0.98)		
Treatment Completers	3.00 (0.94)	-0.71	.48

Table 5. *Intercorrelations among study variables by gender*

	2	3	4	5	6	7	8	9
1. Age								
Male	-.17	-.02	.53	-.48	.11	-.24	-.25	-.08
Female	.23	-.08	-.54**	.40*	.49**	-.22	-.59**	-.28
2. Age First Alcohol								
Male		-.87**	-.58	-.12	.15	-.07	-.28	-.72*
Female		-.25	-.50**	.51**	-.30	-.37*	-.38*	-.35
3. Alcohol Use (QxF)								
Male			.41	-.16	-.35	.41	.01	.55
Female			.30	-.23	-.03	.33	.34	.33
4. Alcohol Consequences								
Male				.03	-.26	-.45	.06	.28
Female				-.48**	.10	.51**	.74**	.45*
5. Age First Sex								
Male					.05	-.59	.79*	.18
Female					-.01	-.02	-.46*	-.24
6. Unprotected Sex								
Male						.06	.47	.31
Female						.11	-.14	.32
7. Risky Sexual Behavior								
Male							-.41	.22
Female							.34	.61**
8. Dysregulation								
Male								.33
Female								.27
9. Sex Alcohol Expectancies								

Note: Male (N = 9), Female (N = 29). \* $p < .05$ , \*\* $p \leq .01$ , \*\*\* $p \leq .001$ .

Table 6. *Demographic Descriptives by Group Condition*

Variable	Group Conditions	
	TAU ( <i>n</i> = 19)	VCS ( <i>n</i> = 19)
Gender		
Male	15.8%	31.6%
Female	84.2%	68.4%
Age	18.3 (1.3)	18.2 (1.3)
Academic Setting		
High School	10.5%	21.1%
College	89.5%	78.9%
Ethnicity		
Caucasian	36.8%	47.4%
African American/Black	10.5%	0%
Hispanic/Latino	15.8%	15.8%
Asian American/Asian	26.3%	15.8%
Multiethnic	10.5%	21.1%

Table 7. *Independent Samples t-Test by Group Condition*

Variable	Group	M	SD	<i>t</i>	<i>p</i>
Age First Use	TAU	15.95	1.96	0.48	.64
	VCS	15.63	2.11		
Total Alcohol Use	TAU	4.07	2.50	0.07	.29
	VCS	3.29	1.99		
Alcohol Consequences	TAU	28.89	6.34	-0.19	.85
	VCS	29.26	5.29		
Age First Sex	TAU	16.26	1.79	0.28	.78
	VCS	16.11	1.70		
Unprotected Sex	TAU	3.02	3.17	0.77	.45
	VCS	2.26	2.99		
Risky Sexual Behaviors	TAU	0.20	0.30	0.64	.52
	VCS	0.15	0.24		
Dysregulation	TAU	2.26	0.41	0.25	.22
	VCS	2.11	0.35		
Sex Alcohol Expectancies	TAU	2.89	1.10	-0.72	.47
	VCS	3.11	0.78		

Table 8. *Independent Samples t-Test by Academic Setting*

Variable	Setting	M	SD	<i>t</i>	<i>p</i>
Age First Use	HS	14.17	1.17	-2.27	.03
	College	16.09	2.01		
Total Alcohol Use	HS	4.32	2.73	0.74	.46
	College	3.56	2.20		
Alcohol Consequences	HS	35.83	10.11	1.92	.11
	College	27.81	3.56		
Age First Sex	HS	15.17	2.40	-1.61	.12
	College	16.38	1.54		
Unprotected Sex	HS	2.68	2.96	0.04	.97
	College	2.63	3.12		
Risky Sexual Behaviors	HS	0.18	0.27	0.02	.99
	College	0.17	0.27		
Dysregulation	HS	2.48	0.64	1.31	.25
	College	2.13	0.30		
Sex Alcohol Expectancies	HS	3.03	0.78	0.07	.95
	College	2.99	0.98		

### Repeated Measures: Differences between TAU and VCS

The primary hypothesis was evaluated by conducting a repeated measures MANOVA. To address the first hypothesis, that participants in the experimental group would have greater reductions in problematic alcohol use, risky sexual behaviors, and positive sex-related alcohol expectancies compared to the treatment as usual group, the analysis included a between-subjects factor of group with two levels and a within-subject factor of time with three levels. Risky sexual behavior was examined two-fold, the first by assessing risky sexual behaviors as measured by a composite of risk taking behaviors (sex while drinking, sex with strangers, and unprotected sex) and by sexual encounters without condom use. Means and standard deviations for the variables are reported in Table 9.

For the first set of analyses, study variables of alcohol quantity and frequency, risky sexual behaviors, and sex related alcohol expectancies were used. The main effect of time was



significant,  $F(3, 33) = 7.39, p \geq .001$ , partial  $\eta^2 = .40$ , indicating that over time there were reductions in the study variables. To examine the temporal relationship of alcohol quantity and frequency, risky sexual behaviors, and sex related alcohol expectancies, appropriate follow-up contrasts were investigated. There were statically significant reductions in alcohol use [ $F(1, 35) = 17.76, p < .001$ , partial  $\eta^2 = .34$ ] and sex related alcohol expectancies [ $F(1, 35) = 10.86, p < .05$ , partial  $\eta^2 = .24$ ] but not in risky sexual behaviors [ $F(1, 35) = 0.55, p = .46$ , partial  $\eta^2 = .02$ ]. Results of this repeated measure analysis are shown in Table 6. The overall Time x Condition interaction was nonsignificant,  $F(3, 33) = .99, p = .41$ , partial  $\eta^2 = .08$ . In this set of analyses there was no difference between groups in the reduction of alcohol use, risky sexual behaviors, and sex related alcohol expectancies (Table 10).

In the second set of analyses, study variables of alcohol quantity and frequency and sex related alcohol expectancies remained the same, but unprotected sex was added to the multivariate ANOVA. For this set of analyses, the main effect of time was also significant,  $F(3, 33) = 14.05, p < .001$ , partial  $\eta^2 = .56$ , indicating that over time there were reductions in alcohol use, unprotected sex, and sex related alcohol expectancies. To investigate the temporal relationship of alcohol quantity and frequency, unprotected sex, and sex related alcohol expectancies, appropriate follow-up contrasts were investigated comparing the follow-up time point against baseline. There were statistically significant reductions in alcohol use [ $F(1, 35) = 17.76, p < .001$ , partial  $\eta^2 = .35$ ], unprotected sex [ $F(1, 35) = 18.18, p < .001$ , partial  $\eta^2 = .34$ ], and sex related alcohol expectancies [ $F(1, 35) = 10.86, p = .002$ , partial  $\eta^2 = .24$ ]. Results of this repeated measure analysis are shown in Table 11. However, the overall Time x Condition interaction was nonsignificant,  $F(3, 33) = 1.38, p = 0.27$ , partial  $\eta^2 = .11$ . Contrary to Hypothesis 1, there was no difference between groups in the reduction of alcohol use [ $F(1, 35) = 2.57, p =$

0.12, partial  $\eta^2 = .07$ ], unprotected sex [ $F(1, 35) = 0.80, p = .38$ , partial  $\eta^2 = .02$ ], or sex-related alcohol expectancies [ $F(1, 35) = 0.04, p = .84$ , partial  $\eta^2 = .00$ ] over time. Graphs depicting these reductions over time between treatment conditions are shown in Figures 5, 6, and 7.

Lastly, the variable of alcohol consequences was examined differently in order to control for baseline consequences reported by participants. A test of ANCOVA was used to compare post-treatment consequences while controlling for baseline. Four week follow-up outcomes including differences based on study condition were assessed. There were no significant differences found at four-weeks or for study condition. See Table 12 for the results of this ANCOVA.

Table 9. Means and Standard Deviations for TAU and VCS groups

Variable	<i>M</i>		<i>SD</i>	
	T1	T2	T1	T2
Alcohol QxF				
TAU	4.16	2.14	2.55	2.07
VCS	3.29	2.38	1.99	1.53
Risky Sexual Behaviors				
TAU	0.21	0.11	0.31	0.20
VCS	0.15	0.16	0.24	0.32
Unprotected Sex				
TAU	3.02	0.95	3.17	1.29
VCS	2.26	0.89	2.98	1.49
Sex Alcohol Expectancies				
TAU	2.89	2.46	1.10	1.20
VCS	3.11	2.65	0.78	0.76

Table 10. *Repeated Measures MANOVA of Time by Group Condition with Study Variables of Alcohol Quantity and Frequency, Risky Sexual Behaviors, Condom Use, and Sex Related Alcohol Expectancies*

Effect	<i>df</i>	<i>F</i>	<i>p</i>	partial $\eta^2$
Time				
Alcohol QxF	1, 35	17.76	.00	.34
Risky Sexual Behaviors	1, 35	0.55	.46	.02
Sex Alcohol Expectancies	1, 35	10.86	.00	.24
Time X Group Condition				
Alcohol QxF	1, 35	2.57	.12	.07
Risky Sexual Behaviors	1, 35	0.85	.36	.02
Sex Alcohol Expectancies	1, 35	0.04	.84	.00

Table 11. *Repeated Measures MANOVA of Time by Group Condition with Study Variables of Alcohol Quantity and Frequency, Condom Use, and Sex Related Alcohol Expectancies*

Effect	<i>df</i>	<i>F</i>	<i>p</i>	partial $\eta^2$
Time				
Alcohol QxF	1, 35	17.76	.00	.34
Unprotected Sex	1, 35	18.18	.00	.34
Sex Alcohol Expectancies	1, 35	10.86	.00	.24
Time X Group Condition				
Alcohol QxF	1, 35	2.57	.12	.07
Unprotected Sex	1, 35	0.80	.38	.02
Sex Alcohol Expectancies	1, 35	0.04	.84	.00

Table 12. *ANCOVA for the outcome of alcohol consequences with baseline consequences as a covariate*

Effect	<i>df</i>	<i>F</i>	<i>p</i>	partial $\eta^2$
Time				
Alcohol Consequences	2	2.19	.15	.06
Study Condition	1	0.86	.36	.02

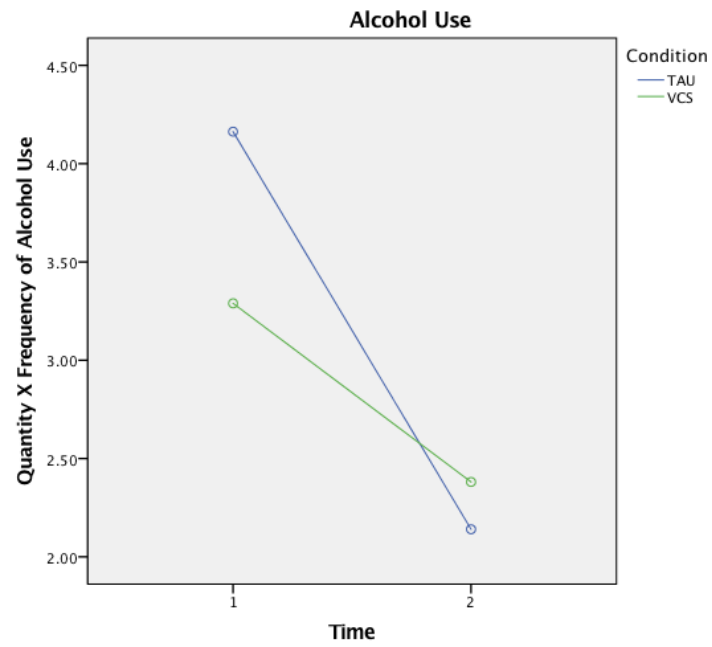
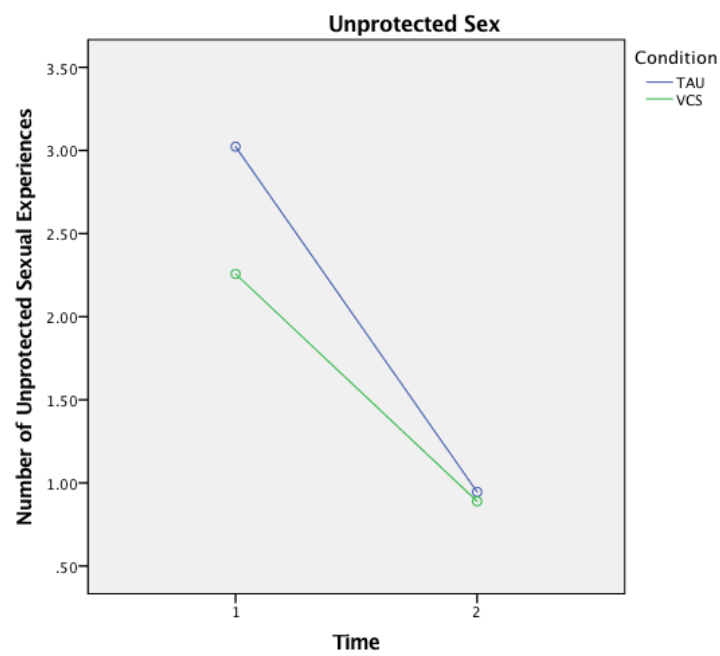
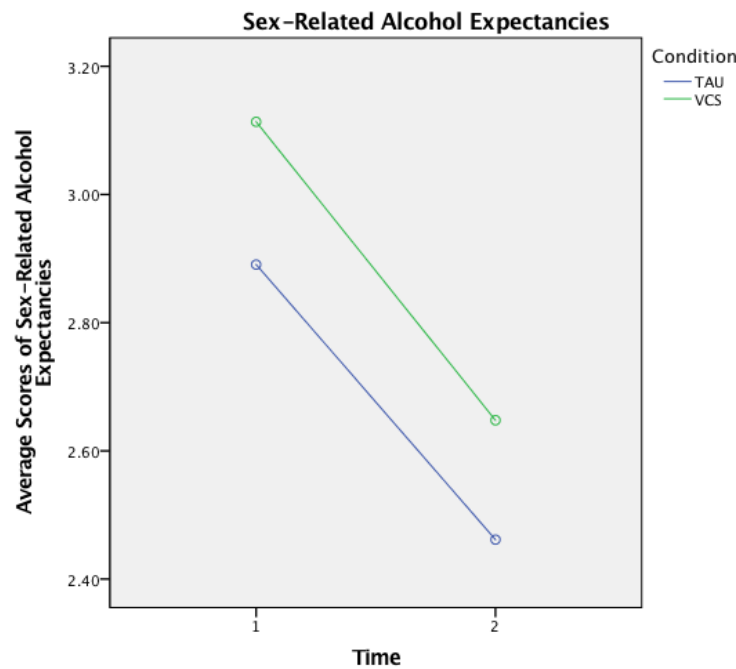


Figure 5. Reductions in alcohol use over time between the TAU and VCS group conditions.



*Figure 6.* Reductions in unprotected sexual experiences over time between the TAU and VCS group conditions.



*Figure 7.* Reductions in average scores of sex-related alcohol expectancies over time between the TAU and VCS group conditions.

### **Serial Mediation: Sex Related Alcohol Expectancies and Alcohol Use**

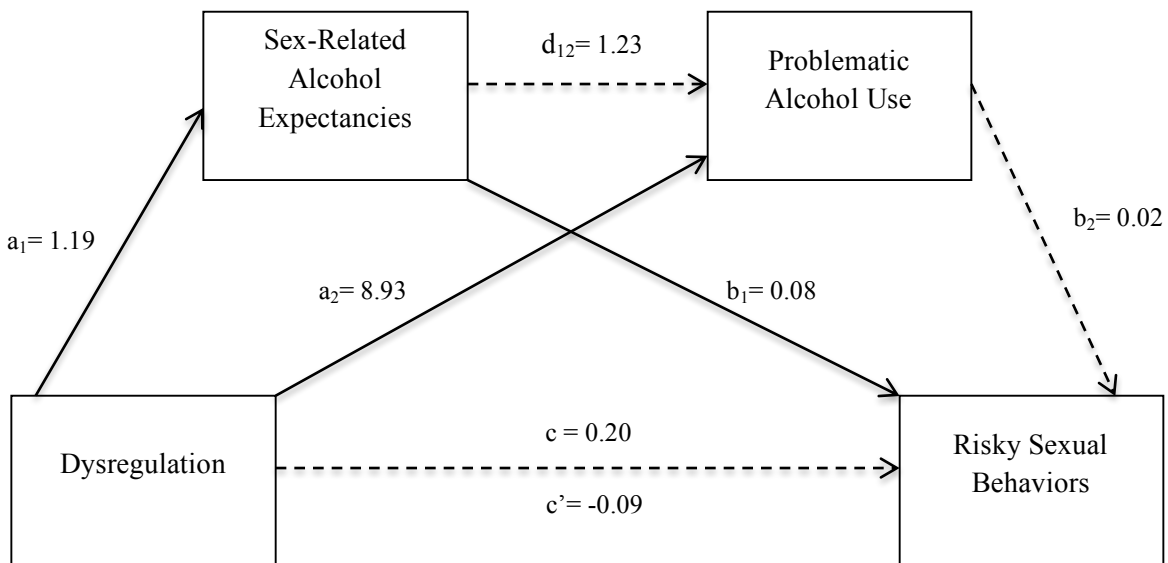
The overall model of serial mediation tested the indirect effects of sex related alcohol expectancies and problematic alcohol use (represented by alcohol consequences) on the relationship between dysregulation and risky sexual behaviors. This was assessed using bias corrected bootstrap modeling (Hayes, 2013). Dysregulation was entered as the independent variable, sex related alcohol expectancies and alcohol use as the proposed mediators respectively, and risky sexual behaviors as the dependent variable. No covariates were controlled because data preparation analyses did not indicate any variables that would strongly influence the relationship between the independent and dependent variable. The model showed a

significant relationship between dysregulation and sex related alcohol expectancies [ $a_1$ :  $b = 1.19$ ,  $t(36) = 2.56$ ,  $p < .05$ ] and alcohol use [ $a_2$ :  $b = 8.93$ ,  $t(35) = 4.78$ ,  $p < .001$ ]. There was also a significant relationship between sex related alcohol expectancies and risky sexual behaviors [ $b_1$ :  $b = 0.08$ ,  $t(34) = 2.23$ ,  $p < .05$ ]. However, the relationship between problematic alcohol use and risky sexual behaviors was nonsignificant [ $b_2$ :  $b = 0.02$ ,  $t(34) = 1.99$ ,  $p = .06$ ]. Lastly, the relationship between the two mediators, sex related alcohol expectancies and problematic alcohol use was also nonsignificant [ $d_{12}$ :  $b = 1.24$ ,  $t(35) = 2.01$ ,  $p = .05$ ].

The overall serial mediation model, including sex related alcohol expectancies and problematic alcohol use as mediators between dysregulation and risky sexual behaviors was significant [ $R^2 = 0.34$ ,  $F(3, 34) = 5.82$ ,  $p < .005$ ]. The total effect (c path) was nonsignificant [ $b = 0.20$ ,  $t(36) = 1.83$ ,  $p = .08$ ] as was the direct effect (c' path) [ $b = -0.92$ ,  $t(34) = -0.68$ ,  $p = .50$ ]. However, even though there was not a statistically significant direct relationship between dysregulation and risky sexual behaviors, the indirect relationship through sex-related alcohol expectancies and problematic alcohol use is still meaningful. As argued by several researchers (Hayes, 2009; Kenny & Judd, 2014; O'Rourke & MacKinnon, 2015), significant indirect effects should be identified even when the total effect is not statistically significant. However, it is also important to be mindful of potential Type I errors when employing this strategy. In these analyses, the direct effect weakened with the addition of the mediators, providing further support that sex related alcohol expectancies and problematic alcohol use are statistically significant mediators of dysregulation and risky sexual behaviors. Additionally, the standardized overall model had a medium sized effect at 0.42. See Table 13 for regression coefficients and confidence intervals related to this model and Figure

Table 13. *Results of Serial Mediation Model of Dysregulation on Risky Sexual Behaviors Mediated by Sex Related Alcohol Expectancies and Alcohol Use*

<u>Sex Related Alcohol Expectancies as First Mediator Variable</u>						
Predictor	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>LLCI</i>	<i>ULCI</i>
Constant	-0.16	1.04	-0.15	.88	-2.25	1.94
Dysregulation	1.19	0.47	2.56	.02	0.25	2.14
<u>Problematic Alcohol Use as Second Mediator Variable</u>						
Predictor	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>LLCI</i>	<i>ULCI</i>
Constant	6.52	3.81	1.71	.10	-1.22	14.27
Sex-Alcohol Expectancies	1.24	0.61	2.01	.05	-0.01	2.48
Dysregulation	8.93	1.87	4.78	.00	5.14	12.73
<u>Risky Sexual Behaviors as Dependent Variable</u>						
Predictor	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>LLCI</i>	<i>ULCI</i>
Constant	-0.38	0.22	-1.68	.10	-0.83	0.08
Sex Alcohol Expectancies	0.08	0.04	2.23	.03	0.01	0.16
Alcohol use	0.02	0.01	1.99	.06	-0.00	0.04
Dysregulation	-0.09	0.14	-0.68	.50	-0.37	0.18
<u>Total Effect of Dysregulation on Risky Sexual Behaviors</u>						
	<i>Effect</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>LLCI</i>	<i>ULCI</i>
Total Effect	0.20	0.11	1.83	0.08	-0.02	0.43
<u>Completely Standardized Indirect Effects of the Model</u>						
	<i>Effect</i>	<i>Boot SE</i>	<i>Boot LLCI</i>		<i>Boot ULCI</i>	
Indirect Effect 1	0.14	0.10	0.20		0.38	
Indirect Effect 2	0.04	0.03	0.00		0.16	
Indirect Effect 3	0.24	0.13	0.06		0.58	
Total	0.42	0.16	0.16		0.79	



*Figure 8. Serial multiple mediation model of dysregulation on risky sexual behaviors with M1 as sex related alcohol expectancies and M2 as problematic alcohol use.  
 → significant path; --> nonsignificant path.*



## CHAPTER IV

### Discussion

The current study tested the effectiveness of a pilot-based MI intervention to decrease problematic alcohol use, risky sexual behaviors, and positive attitudes related to these risk-taking behaviors. The intervention involved two randomized groups, one of which received personalized normative feedback on their alcohol use and sexual behaviors. The second group also received a values card sort activity in addition to personalized normative feedback. The purpose of the values card sort activity was to examine current behaviors in relation to the participant's value system. It was hypothesized that (1) participants in the experimental group (VCS) would have greater reductions in alcohol use, RSB, and positive sex-related alcohol expectancies compared to the treatment as usual (TAU) control group.

The second aim of the study was to examine pathways to sexual risk taking through the framework of an acquired preparedness model. This model suggests that positive expectancies mediate the relationship between trait dysregulation and problematic alcohol use. In the context of the current study, it was proposed that sex related alcohol expectancies and problematic alcohol use would mediate the relationship between dysregulation and risky sexual behaviors. This was tested through a serial mediation model and specific hypotheses included: (2) elevated dysregulation will predict positive sex-related alcohol expectancies; (3) positive sex-related alcohol expectancies will predict increased risky sexual behavior; (4) elevated dysregulation will predict increased alcohol use; (5) increased alcohol use will predict increased risky sexual behavior; (6) positive sex-related alcohol expectancies will predict increased alcohol use; and (7) sex-related alcohol expectancies and alcohol use will mediate the pathway from dysregulation to risky sexual behaviors. While many studies have examined the effectiveness of personalized

normative feedback, this study uniquely explored the outcomes of a values card sort task in addition to personalized normative feedback with a sample of underage drinkers.

**Effectiveness of a Values Card Sort Intervention.** The first hypothesis, that participants in the experimental group (VCS) that received a values card sort would have greater reductions in alcohol use, RSB, and positive sex-related alcohol expectancies compared to the treatment as usual group (TAU) was not supported. Results indicated that over time, both study conditions experienced reductions in overall alcohol use, alcohol related consequences, and positive sex-related alcohol expectancies. Both groups also evidenced an increase in protective condom use during intercourse. Large effect sizes were observed, indicating that there was adequate power and this change in risk taking behavior and positive expectancies was meaningful despite the small sample size. Overall reductions in risky sexual behaviors, including sex while drinking and having sex with strangers, did not significantly decrease over time with either group. The VCS group did not experience any greater effects over time compared to the TAU group, suggesting that youth who received either type of direct intervention experienced decreases in risk taking behaviors and an increase in condom use. The addition of a values card sort did not add any unique effects to create greater reductions in risk behavior. It is important to note that the values card sort was only compared to the treatment as usual group and both groups received an intervention in the form of personalized normative feedback. Therefore, the current study is unable to conclude whether the values card sort would create change in adolescents who did not receive feedback on their alcohol use and sexual behaviors.

**Acquired Preparedness Model.** Hypotheses 2-7, examined the outcomes of an acquired preparedness model with variables of sex-related alcohol expectancies and problematic alcohol use mediating the relationship between dysregulation and risky sexual behaviors. Results

indicated that elevated scores in dysregulation significantly predicted (2) positive sex-related alcohol expectancies and (4) problematic alcohol use. Positive sex-related alcohol expectancies (3) also significantly predicted increased risky sexual behavior but this effect was much less robust than the relationship between dysregulation, sex-related alcohol expectancies, and problematic alcohol use. Sex-related alcohol expectancies (6) did not predict problematic alcohol use, and in turn, (5) problematic alcohol use did not significantly predict risky sexual behaviors but was close to approaching significance. The overall test of the acquired preparedness model, (7) that sex-related alcohol expectancies and problematic alcohol use will mediate the pathway between dysregulation and risky sexual behaviors was significant. Although the relationship between dysregulation and risky sexual behaviors was nonsignificant, when the mediators of sex-related alcohol expectancies and problematic alcohol use were added to the model, the indirect pathway became statistically significant suggesting expectancies and alcohol use play an important role in the relationship between dysregulation and RSB.

These results indicate the trait of dysregulation is an important contributing factor in problematic alcohol use but not in direct relation to risky sexual behaviors. This finding, that dysregulation does not directly predict RSB, is contrary to previous research (Tull, Weiss, Adams, & Gratz, 2012; Winters et al., 2009). However, the current study did find that even though elevations in dysregulation did not directly predict increases in risky sexual behavior, individuals with trait dysregulation and positive sex-related alcohol expectancies (focused on reward-based rather than consequence-based results) are at greater risk for engaging in sexual risk taking. Similarly, although there was not a direct relationship between sex-related alcohol expectancies and problematic alcohol use, these two variables working together impact the relationship between dysregulation and risky sexual behavior. Youth with elevations in

dysregulation, who exhibit positive expectancies about sex and alcohol, and experience consequences related to their alcohol use, take part in more sexual risk behaviors including unprotected sex, sex with strangers, and sex while drinking.

### **Clinical Implications**

Although results did not indicate that a values card sort intervention tool added any meaningful change to personalized normative feedback in this MI-based pilot study, there were several important implications from these outcomes. The finding that regardless of group assignment, participants experienced reductions in alcohol use, alcohol consequences, unprotected sex, and sex-related alcohol expectancies, highlights the importance of personalized feedback interventions among underage drinkers engaging in risk behavior. Personalized feedback interventions are often used in motivational enhancement treatments with adolescents and young adults to promote behavioral change (Cadigan, Haeny, Martens, Weaver, Takamatsu, & Arterberry, 2015; Martens, Smith, & Murphey, 2013; White, 2006). The current study found similar results with large effect sizes, suggesting that this intervention tool is influential in highlighting discrepancies among youth and promoting positive behavioral change. It may be that personalized normative feedback is a powerful enough mechanism of change that it does not require the addition of other intervention tools to foster change. Comparisons to same aged peers' behavior may be more influential in creating change than reflecting on one's own value system, and the addition of other tools does not create any further meaningful change.

Considering these results from a developmental perspective offers an interesting alternative interpretation. According to Erikson's psychosocial stages of development, teenagers are in the phase of just beginning to form their own identity through exploration of personal values, beliefs, and goals (Erickson, 1950). Potentially, youth do not yet have a well-defined

value system to make behavioral changes based on their personal belief system.

Developmentally, Erickson's theory suggests that they are at a stage where peers' behavior is more influential than their own belief system. During this pivotal stage, peer groups serve numerous important functions, one of which is to provide a temporary reference point for developing a sense of identity that later impacts the development of moral judgement and values (Bishop & Inderbitzen, 1995). In the current study, adolescents and young adult's value systems may not have been well-defined enough to prompt sustainable behavioral change. Rather, they were more influenced by accurate feedback of their own behaviors in relation to peers, and consequently adjusted their risk behavior to fit with their peers regardless of their own value system. Another consideration for this finding is that the college sample attended a faith-based university where values reminders are implicitly and explicitly expressed on campus (e.g., requirement to attend chapel, bible verses on public display, faith integration in classes). Thus, the values card sort may have a lower differential effect on this population than other samples of older adolescents and young adults on school campuses without a faith component.

Since sexual risk taking is a major public health concern (WHO, 2011), and alcohol use influences decisions to engage in indiscriminate forms of risky sex (Cooper, 2002; Rehm, Shield, Joharchi, & Shuper, 2011; Seth, Wingood, DiClemente, & Robinson, 2011), understanding effective intervention tools is vital to mitigate the serious consequences associated with these risk behaviors. The purpose of the current study was to assess the efficacy of a values card sort intervention in reducing the risk of these behaviors. Efficacy trials are important in providing information about whether a certain treatment or program does more good than harm when delivered as a standardized treatment, and are important building blocks to the development of new psychosocial treatments or technologies (Flay, 1986). The current small-scale study, focused

on the efficacy of a values card sort in a sample of high school and college aged youth, found that this intervention tool did not drive any meaningful change in addition personalized feedback. Researchers and clinicians working with youth at risk for consequences related to alcohol use and RSB, may use these results as a guide to focus less on values and instead utilize PFIs to drive meaningful change.

Concerning results from the acquired preparedness model, these findings also have important clinical implications. Clinicians working with youth demonstrating impulsive, disinhibited behavior should understand that this may not directly impact sexual risk taking, but assess rather for attributions adolescents make about sex. If adolescents and young adults demonstrate positive beliefs about sex (e.g., drinking makes me more sexually responsive and less nervous about sex) they are more likely to engage in sexual risk taking, such as having unprotected sex or sex with a stranger. Cognitive work in therapy could target these assumptions to mediate the effects of sex-related alcohol expectancies on later RSB. Additionally, these findings point to the importance of also focusing on the role of alcohol use in addressing sexual risk taking. Although problematic alcohol use itself does not necessarily predict RSB, it contributes to the overall picture for youth with impulsive personalities and positive beliefs about sex.

### **Limitations**

Recruitment was a significant challenge in the current study. Clinical research done in school systems is often met with unique obstacles. Common barriers to successful research in schools include lack of support from school administration and teachers, lack of family engagement, and student absenteeism (Langley, Nadeem, Kataoka, Stein, & Jaycox, 2010; Weist, Stiegler, Stephan, Cox, & Vaughan, 2010). The current study hit similar roadblocks in

school administration with issues occurring at the district level that trickled down to each individual high school site. It took nearly an entire academic year to resolve these issues to finally allow for recruitment on site. Other barriers to recruitment included the types of substance used by adolescents in the Pacific Northwest. The head psychologist at the school health clinic assisting in recruitment, observed that adolescents presenting to the clinic favored marijuana use. Few high school students were actually engaging in alcohol use making them ineligible for the current study. This finding may be region specific since attitudes toward marijuana are increasingly less critical in the Pacific Northwest region. Subcultural views interpret marijuana as less harmful than alcohol, likely affecting how youth in the Pacific Northwest use it compared to teenagers in other areas of the country. Although alcohol use is considered a major public health problem in underage youth (CDC, 2014c), high school adolescents recruited for the current study were using it at less prevalence rates than marijuana.

Recruitment issues occurred at the college level too. It is important to note that participants at the college level attended a small, private Christian university with a student code of conduct that prohibits “premarital, extramarital, or homosexual sexual activities” and “illegal, underage consumption and/or possession of alcohol...permitted either on or off campus.” Failure to comply with these policies can result in disciplinary action. It is possible that recruitment at the university level was slow because of student fears of participation in a research study that collected data and discussed alcohol use and sexual behavior. Although participation was anonymous, there were limits to confidentiality since undergraduate students received course credit for participation. This limited the anonymity of their participation since individual instructors would know that they took part in the study. It is possible that the instructor’s

knowledge of their participation in a sexual and alcohol health study prevented students from participating.

Regarding the population sampled, it is important to note the differences between these two groups. The high school sample was recruited from a health clinic where they were seeking health services for either substance use or sexual health concerns. Thus, this sample was more clinical in nature since the participants were seeking services related to these potentially risky behaviors. Disparately, participants in the college sample were more similar to the general population rather than a clinical, health-seeking group. Despite contextual differences between these two groups, there were few statistically significant differences. Namely, participants in the high school group started drinking at a younger age. Other differences included traits of dysregulation and alcohol consequences which were more statistically significantly correlated with younger female participants. Unprotected sex was correlated with older, female participants who potentially had greater access to alternative birth control methods. Sample size likely affected finding more meaningful differences between these two groups, but it brings up an interesting question of similarities and differences between college and high school youth. Perhaps, younger college students (freshmen and sophomores) are more like their health-seeking high school counterparts than their older peers over the age of 21.

Due to issues in recruitment, a small sample size was yielded even though data collection occurred over the span of two academic years. Smaller sample sizes create issues with finding true significance, predictive value, and effect sizes (Button, et al., 2013; Cohen, 1992). However, despite the small sample size, large effect sizes were found in reductions of alcohol use, alcohol consequences, unprotected sex, and sex-related alcohol expectancies. Additionally, the overall serial mediation model evidenced a medium effect size. Although these effect sizes are



encouraging, they should be interpreted cautiously since underpowered studies are likely to exaggerate the magnitudes of effect sizes (Button et al., 2013). Although there are concerns, the sample size in the current study is consistent with pilot studies that examine feasibility of an approach from a smaller scale and indicate that a range of 20-25 participants per group is typically adequate when population effect sizes are moderate or larger (Hertzog, 2008). Given the results of this smaller scale efficacy trial, there is a need for further refinement of treatment interventions and continued use of personalized feedback interventions for underage drinkers.

Lastly, both groups of participants received treatment due to the high-risk nature of the behaviors. Given this study design, it is not possible to determine if the values card sort would create meaningful change when compared to a population of youth who did not receive an intervention component. Thus, assertions about the effectiveness of the values card sort can only be considered in relation to personalized normative feedback. The current research is unable to conclude what change might look like when using a values card sort without included personalized feedback. This again served the purpose of the current study to examine efficacy on a smaller scale and contribute to the discussion of treatment generation.

### **Future Research**

This small-scale efficacy study contributes to the discussion of possible treatment interventions for youth at-risk for the consequences associated with risky sex and alcohol behaviors. Future studies should examine these efforts on a larger scale to increase the generalizability of the findings. Research and clinical work should continue to use personalized feedback interventions to drive meaningful change for samples of youth in both high school and college settings. The use of a values card sort should be examined compared to a control group that does not receive treatment. However, close supervision may be required to monitor

participants in the non-treatment condition to safely monitor risk behaviors and intervene if necessary to avoid severe consequences. Longer follow-ups (e.g., 8 weeks, 6 months) would also provide more specific information about the sustainability of reductions in alcohol use, alcohol consequences, unprotected sex, and sex-related alcohol expectancies.

Efforts should be paid to designing school-based research studies especially for at-risk youth. Although numerous barriers exist in school-based interventions, it is an effective way of meeting youth where they are at and intervening in a meaningful way. School based health centers are essential in serving urban, low-income, and minority students who would otherwise not have access to physical health or mental health services (Knopf, et al., 2016). These minority youth are also at an increased risk for disproportionate substance use consequences (Stewart, Moise-Campbell, Chapman, Varma, & Lehinger, 2016) and need access to targeted substance use and sexual health interventions. Intervening at school can impact educational and health related outcomes in addition to broader psychosocial factors (Knopf et al., 2016; Stewart, et al., 2016). Consideration should be given in continuing to address high risk behaviors of problematic alcohol use and risky sex in school settings.

## References

- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders (4<sup>th</sup> ed., text rev.)*. Washington, DC: Author.
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders (5th ed.)*. Arlington, VA: American Psychiatric Publishing.
- Babor, T. F., De La Fuente, J. R., Saunders, J., & Grant, M. (1992). AUDIT: The alcohol use disorder identification test. *Guidelines for Use in Primary Health Care*. Geneva, Switzerland: World Health Organization
- Bandura, A. (1986). *Social foundations of thought and action*. Englewood Cliffs, NJ: Prentice-Hall.
- Barnett, N. P., Murphy, J. G., Colby, S. M., & Monti, P. M. (2007). Efficacy of counselor vs. computer-delivered intervention with man-dated college students. *Addictive Behaviors*, *32*, 2529–2948
- Barnett E., Sussman, S., Smith, C., Rohrback, L. A., & Spruijt-Metz, D. (2012). Motivational interviewing for adolescent substance use: A review of the literature. *Addictive Behaviors*, *37*(12), 1325-1334.
- Barnow, S., Schultz, G., Lucht, M., Ulrich, Preuss, U.-W., & Freyberger, H.-J. (2004). Do alcohol expectancies and peer delinquency/substance use mediate the relationship between impulsivity and drinking behavior in adolescence. *Alcohol and Alcoholism*, *39*(3), 213-219
- Berkowitz, A. D. (2005). An overview of the social norms approach. In L. Lederman & L. Stewart, (Eds.), *Changing the Culture of College Drinking: A Socially Situated Prevention Campaign* (pp. 187-208). New York, NY: Hampton Press
- Bersamin, M., Paschall, M. J., Fearnow-Kenney, M. & Wyrick, D. (2007). Effectiveness of a web-based alcohol-misuse and harm-prevention course among high- and low-risk students. *Journal of American College Health*, *55* 247-254
- Billieux, J., Rochat, L., Ceschi, G., Carré, A., Offerlin-Meyer, I., Defeldre, A. C., . . . Van der Linden, M. (2012). Validation of a short French version of the UPPS-P impulsive behavior scale. *Comprehensive Psychiatry*, *53*, 609-615.
- Bishop, J. A., & Inderbitzen, H. M. (1995). Peer acceptance and friendship: An investigation of their relationship to self-esteem. *Journal of Early Adolescence*, *15*, 476-489.
- Braithwaite, V. A. & Blamey, R. (1988). Consensus, stability and meaning in abstract social values. *Australian Journal of Political Science*, *33*, 363-380.
- Brandler, S. (1999). The small structured group: A tool for teaching social values. *Social Work*

*with Groups*, 22(1), 79.

- Brown, S. A., Creamer, V. A., & Stetson, B. A. (1987). Adolescent alcohol expectancies in relation to personal and parental drinking practices. *Journal of Abnormal Psychology*, 96, 117-121.
- Brown, S. A., Goldman, M. S., & Christiansen, B. A. (1985). Do alcohol expectancies mediate drinking patterns of adults? *Journal of Consulting and Clinical Psychology*, 53, 512-519.
- Brown, S. A., Goldman, M. S., Inn, A. M., & Anderson, L. (1980). Expectancies of reinforcement from alcohol: Their domain and relation to drinking patterns. *Journal of Consulting and Clinical Psychology*, 48, 419-426.
- Brown, S. A., Myers, M. G., Lippke, L., Tapert, S. F., Stewart, D. G., & Vik, P. W. (1998). Psychometric evaluation of the Customary Drinking and Drug Use Record (CDDR): A measure of adolescent alcohol and drug involvement. *Journal of Studies on Alcohol*, 59(4), 427-438.
- Bryan, A., Ray, L. A., & Cooper, L. M. (2007). Alcohol use and protective sexual behaviors among high-risk adolescents. *Journal of Studies on Alcohol and Drugs* 68(3), 327-335
- Button, K. S., Ioannidis, J. P. A., Mokrysz, C., Nosek, B. A., Flint, J., Robinson, E. S. J., & Munafò, M. R. (2013). Power failure: Why small sample size undermines the reliability of neuroscience. *Nature Reviews Neuroscience*, 14, 365-376.
- Cadigan, J. M., Haeny, A. M., Martens, M. P., Weaver, C. C., Takamatsu, S. K., Arterberry, B. J. (2015). Personalized drinking feedback: A meta-analysis of in-person versus computer-delivered interventions. *Journal of Consulting and Clinical Psychology*, 83(2), 430-437
- Carey, M. P., & Lewis, B. P. (1999). Motivational strategies can augment HIV-risk reduction programs. *AIDS and Behavior*, 3(4), 269-276.
- Casswell, S., Gilmore, L. L., Silva, P., & Brasch, P. (1988). What children know about alcohol and how they know it. *British Journal of Addictions*, 83, 223-227.
- Center for Behavioral Health Statistics and Quality. (2016). *2015 National Survey on Drug Use and Health: Detailed Tables*. Substance Abuse and Mental Health Services Administration, Rockville, MD
- Centers for Disease Control and Prevention (2013). Youth risk behavior surveillance- United States, 2009. *Morbidity and Mortality Weekly Report*, 59(SS05). Retrieved from <http://www.cdc.gov/mmwr/pdf/ss/ss6304.pdf>
- Centers of Disease Control and Prevention (2014a). *HIV Surveillance Report, 2011*. Retrieved from <http://www.cdc.gov/hiv/topics/surveillance/resources/reports>

- Centers for Disease Control and Prevention. (2014b). *Sexually transmitted disease surveillance, 2012*. Retrieved from <http://www.cdc.gov/std/stats12/Surv2012.pdf>
- Centers for Disease Control and Prevention. (2014c). Youth risk behavior surveillance- United States, 2013. *Morbidity and Mortality Weekly Report*, 63(4). Retrieved from [http://www.cdc.gov/mmwr/pdf/ss/ss6304.pdf?utm\\_source=rss&utm\\_medium=rss&utm\\_campaign=youth-risk-behavior-surveillance-united-states-2013-pdf](http://www.cdc.gov/mmwr/pdf/ss/ss6304.pdf?utm_source=rss&utm_medium=rss&utm_campaign=youth-risk-behavior-surveillance-united-states-2013-pdf).
- Cheng, A.-S. & Fleischmann, K. R. (2010). Developing a meta-inventory of human values. *Proceedings of the American Society for Information Science and Technology*, 47(1), 1-10.
- Chernoff, R. A. & Davison, G. C. (1999). Values and their relationship to HIV/AIDS risk behavior among late-adolescent and young adult college students. *Cognitive Therapy and Research*, 23(5), 453-468.
- Christiansen, B. A., & Goldman, M. S. (1983). Alcohol-related expectancies versus demographic/background variables in the prediction of adolescent drinking. *Journal of Consulting and Clinical Psychology*, 51, 249-257.
- Clark, D. B., Thatcher, D. L., & Tapert, S. F. (2008). Alcohol, psychological dysregulation, and adolescent brain development. *Alcoholism: Clinical and Experimental Research*, 32(3), 375-385. doi:10.1111/j.1530-0277.2007.00601.x
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112(1), 155-159.
- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis in the behavioral sciences* (3rd ed.). Mahwah, NJ: Erlbaum.
- Connors, G. J., O'Farrell, T. J., Cutter, H. S. G., & Thompson, D. C. (1986). Alcohol expectancies among male alcoholics, problem drinkers and nonproblem drinkers. *Alcoholism: Clinical and Experimental Research*, 10, 667-671.
- Cooper, M. L. (2002). Alcohol use and risky sexual behavior among college students and youth: Evaluating the evidence. *Journal of Studies on Alcohol and Drugs*, 14, 101-117
- Conroy, W. J. (1979). Human values, smoking behavior, and public health programs. In M. Rokeach (Ed.), *Understanding human values: Individual and societal* (pp. 199-209). New York, NY: Holt, Rinehart, & Watson
- Cunningham, R. M., Chermack, S. T., Shope, J. T., Bingham, C. R., Zimmerman, M. A., Blow, F. C., & Walton, M. A. (2010). Effects of a brief intervention for reducing violence and alcohol misuse among adolescents: A randomized trial. *Journal of the American Medical Association*, 304(5), 527-535
- Darkes, J. & Goldman, M. S. (1998). Expectancy challenge and drinking reduction: Process and

- structure in the alcohol expectancy network. *Experimental and Clinical Psychopharmacology*, 6(1), 64-76.
- Dawes, M. A., Antelman, S. M., Vanyukov, M. M., Giancola, P., Tarter, R. E., Susman, E. J., Mezzich, A., & Clark, D. B. (2000). Developmental sources of variation in liability to adolescent substance use disorders. *Drug and Alcohol Dependence*, 61(1), 3-14.
- Dermen, K. H., & Cooper, M. L. (1994). Sex-related alcohol expectancies among adolescents: I. scale development. *Psychology of Addictive Behaviors*, 8(3), 152-160.
- Dermen, K. H., Cooper, M. L. (1994). Alcohol expectancies among adolescents: II. Prediction of drinking in social and sexual situations. *Psychology of Addictive Behaviors*, 8(3), 161-168
- Dermen, K. H., Cooper, L. M., Agocha, B. V. (1998). Sex-related alcohol expectancies as moderators of the relationship between alcohol use and risky sex in adolescents. *Journal of Studies on Alcohol*, 59(1), 71-77
- Dimeff, L. A., Baer, J. S., Kivlahan, D. R., Marlatt, G. A. (1999). *Brief alcohol screening and intervention for college students*. New York: Guilford Press
- Doumas, D. M., & Andersen, L. L. (2009). Reducing alcohol use in first-year university students: Evaluation of a Web-based personalized feedback program. *Journal of College Counseling*, 12(1), 18-32.
- Duncan, S. C., Strycker, L. A., & Duncan, T. E. (1999). Exploring associations in developmental trends of adolescent substance use and risky sexual behavior in a high-risk population. *Journal of Behavioral Medicine*, 22(1), 21-34.
- Edwards, A., & Allen, C. (2008). Values clarification used as intervention for urban, delinquent, pregnant adolescents and young mothers. *Journal of Human Behavior in the Social Environment*, 18(1), 1-14.
- Elliot, J. C., Carey, K. B., & Bolles, J. R. (2008). Computer-based intervention for college drinking: A qualitative review. *Addictive Behaviors*, 33, 994-1005
- Erikson, E. H. (1950). *Childhood and society*. New York, NY: Norton.
- Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G\*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39, 175-191.
- Field, A. P. (2009). *Discovering statistics using SPSS*. London, England: SAGE.
- Finer, L. B. & Zolna, M. R. (2011). Unintended pregnancy in the United States: Incidence and disparities, 2006. *Contraception*, 84(5) 478-485.

- Fisher, J. D., Fisher, W. A., Bryan, A. D., & Misovich, S. J. (2002). Information-motivation-behavioral skills model-based HIV risk behavior change intervention for inner-city high school youth. *Health Psychology, 21*(2), 177-186.
- Flay, B. R. (1986). Efficacy and effectiveness trials (and other phases of research) in the development of health promotion programs. *Preventative Medicine, 15*, 451-474.
- Friedman, R. S., McCarthy, D. M., Pedersen, S. L., & Hicks, J. A. (2009). Alcohol expectancy priming and drinking behavior: The role of compatibility between prime and expectancy content. *Psychology of Addictive Behaviors, 23*(2), 329-333.
- Fromme, K. & D'Amico, E. J. (2000). Measuring adolescent alcohol outcome expectancies. *Psychology of Addictive Behaviors, 14*, 206-212.
- Goldman, M. S., Brown, S. A., Christiansen, B. A., & Smith, G. T. (1991). Alcoholism and memory: Broadening the scope of alcohol-expectancy research. *Psychological Bulletin, 110*, 137-146.
- Golub, S. A., Starks, T. J., Kowalczyk, W. J., Thompson, L. I., & Parsons, J. T. (2012). Profiles of executive functioning: Associations with substance dependence and risky sexual behavior. *Psychology of Addictive Behaviors, 26*(4), 895-905.
- Guth, W. D. & Tagiuri, R. (1965). Personal values and corporate strategy. *Harvard Business Review, 43*, 123-132.
- Guttmacher Institute. (2014). *Fact sheet: American teens' sexual and reproductive health*. Retrieved from <http://www.guttmacher.org/pubs/FB-ATSRH.html>
- Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication Monographs, 76*, 408-420.
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York, NY: Guilford Press
- Hayaki, J., Herman, D. S., Hagerty, C. E., de Dios, M. A., Anderson, B. J., & Stein, M. D. (2012). Expectancies and self-efficacy mediate the effects of impulsivity on marijuana use outcomes: An application of the Acquired Preparedness Model. *Journal of Addictive Behavior, 36*(4) 389-396
- Helzer, J. E., Burnam, A., & McEvoy, L. T. Alcohol abuse and dependence. In L. Robins & D. Reiger (Eds.), *Psychiatric disorders in America: The epidemiological catchment area study* (pp. 81-115). New York, NY: MacMillan.
- Hendershot, C. S., Magnan, R. E., & Bryan, A. D. (2010). Associations of marijuana use and sex-related marijuana expectancies with HIV/STD risk behavior in high-risk adolescents. *Psychology of Addictive Behaviors, 24*(3), 404-414.

- Hendershot, C. S., Stoner, S. A., George, W. H., Norris, J. (2007). Alcohol use, expectancies, and sexual sensation seeking as correlates of HIV risk behavior in heterosexual young adults. *Psychology of Addictive Behaviors, 3*, 365-372
- Hingson, R. W., Zha, W., & Weitzman, E. R. (2009). Magnitude of and trends in alcohol-related mortality and morbidity among U.S. college students ages 18-24, 1998-2005. *Journal of Studies on Alcohol and Drugs (Suppl 16)*, 12-20
- Hutcheon, P. D. (1972). Value theory: Towards conceptual clarification. *The British Journal of Sociology, 23*(2), 172-187
- James, W. (1890). *The principles of psychology*. (Vol. 1.) New York, NY: Holt
- Jessor, R., Donovan, J. E., & Costa, F. (1991). *Beyond adolescence: Problem behavior and young adult development*. New York, NY: Cambridge
- Kahn, J. A., Kaplowitz, R. A., Goodman, E., & Emans, S. J. (2002). The association between impulsiveness and risky sexual behaviors in adolescent and young adult women. *Journal of Adolescent Health, 30*, 229-232.
- Kenny, D. A., & Judd, C. M. (2014). Power anomalies in testing mediation. *Psychological Science, 25*, 334-339.
- Knopf, J. A., Finnie, R. K. C., Peng, Y., Hahn, R. A., Truman, B. I., Vernon-Smiley, M... Fullilove, M. T. (2016). School-based health centers to advance health equity. *American Journal of Preventative Medicine, 51*(1), 114-126.
- Kost, K. & Henshaw, S. (2014). U.S. teenage pregnancies, births, and abortions, 2010: National and state trends by age, race, and ethnicity. Guttmacher Institute. Retrieved from <http://www.guttmacher.org/pubs/USTPtrends10.pdf>
- Kraus, D., Smith, G. T., Ratner, H. H. (1994). Modifying alcohol-related expectancies in grade-school children. *Journal of Studies on Alcohol, 55*, 535-542.
- Kypri, K., Saunders, J. B., & Gallagher, S. J. (2003). Acceptability of various brief intervention approaches for hazardous drinking among university students. *Alcohol and Alcoholism, 38*, 626-628
- Kypri, K., Saunders, J. B., Williams, S. M., McGee, R. O., Langley, J. D., Cashell-Smith, M. L., & Gallagher, S. J. (2004). Web-based screening and brief intervention for hazardous drinking: A double-blind randomized controlled trial. *Addiction, 99*, 1410-1417.
- Lanctot, N. & Smith, C. A. (2001). Sexual activity, pregnancy, and deviance in a representative urban sample of African American girls. *Journal of Youth and Adolescence, 30*, 349-372, doi:10.1023/A:1010496229445.



- Langley, A. K., Nadeem, E., Kataoka, S. H., Stein, B. D., & Jaycox, L. D. (2010). Evidence-based mental health programs in schools: Barriers and facilitators of successful implementation. *School Mental Health, 2*(3), 105-113.
- Lejuez, C. W., Bornovalova, M. A., Daughters, S. B., & Curtin, J. J. (2005). Differences in impulsivity and sexual risk behavior among inner-city crack cocaine users and heroin users. *Drug and Alcohol Dependence, 77*, 169-175.
- Leitenberg, H., & Saltzman, H. (2009). A statewide survey of age at first intercourse for adolescent females and age of their male partners: Relation to other risk behaviors and statutory rape implications. *Archives of Sexual Behavior, 29*, 203–215.
- Lewis, M. A., Lee, C. M., & Patrick, M. E. (2007). Gender-specific normative misperceptions of risky sexual behavior and alcohol-related risky sexual behavior. *Sex Roles, 57*, 81-90.
- Lewis, M. A., Patrick, M. E., Litt, D. M., Atkins, D. C., Kim, T., Blayney, J. A., & ... Larimer, M. E. (2014). Randomized controlled trial of a web-delivered personalized normative feedback intervention to reduce alcohol-related risky sexual behavior among college students. *Journal of Consulting and Clinical Psychology 82*(3), 429-440.
- Lutz-Zois, C. J., Roecker Phelps, C. E., & Reichle, A. C. (2011). Affective, behavioral, and social-cognitive dysregulation as mechanisms for sexual abuse revictimization. *Violence and Victims, 26*(2), 159-176.
- Maio, G.R., Olson, J.M., Allen, L. & Bernard, M.M. (2001). Addressing discrepancies between values and behavior: The motivating effect of reasons. *Journal of Experimental Social Psychology, 37*, 104-117.
- Mann, L. M., Chassin, L., & Sher, K. J. (1987). Alcohol expectancies and the risk for alcoholism. *Journal of Consulting and Clinical Psychology, 55*, 411-417.
- Marlatt, A. G., Demming, B., & Reid, J. B. (1973). Loss of control in alcoholics: An experimental analogue. *Journal of Abnormal Psychology, 81*(3), 233-241.
- Martens, M. P., Smith, A. E., & Murphy, J. G. (2013). The efficacy of a single-component brief motivational interventions among at-risk college drinkers. *Journal of Consulting and Clinical Psychology, 81*(4), 691-701.
- Martin, A., Ruchkin, V., Caminis, A., Vermeiren, R., Henrich, C. C., & Schwab-Stone, M. (2005) Early to bed: A study of adaptation among sexually active urban adolescent girls younger than age sixteen. *Journal of the American Academy of Child and Adolescent Psychiatry, 44*, 358–367.
- Macgowan, M. J. & Engle, B. (2010). Evidence for optimism: Behavior therapies and

- motivational interviewing in adolescent substance abuse treatment. *Child and Adolescent Psychiatric Clinics of North America*, 19(3), 527.
- Martin, C. S., Earleywin, M., Blackson, T. C., Vanyukov, M. M., Moss, H. B., & Tarter, R. E. (1994). Aggressivity, inattention, hyperactivity, an impulsivity in boys at high and low risk for substance abuse. *Journal of Abnormal Child Psychology*, 22(2), 177-203.
- Messman-Moore, T. L., Walsh, K. L., & DiLillo, D. (2010). Emotion dysregulation and risky sexual behavior in revictimization. *Child Abuse and Neglect*, 34(12), 967-976.
- Mezzich, A. C., Tarter, R. E., Feske, U., Kirisci, L. McNamee, R. L., & Day, B. (2007). Assessment of risk for substance use disorder consequent to consumption of illegal drugs: Psychometric validation of the neurobehavior disinhibition trait. *Psychology of Addictive Behaviors*, 21(4), 508-515
- Miller, W. R., C'de Baca, J., Matthews, D. B., & Wilbourne, P. L. (2001). Personal values card sort. *Unpublished clinical tool*.
- Miller, W. R. (1996). Motivational interviewing: Research, practice, and puzzles. *Addictive Behaviors*, 21 835-842.
- Miller, W. R., & Rollnick, S. (2002). *Motivational interviewing: Preparing people for change*. New York, NY: Guilford Press.
- Miller, D. J., Vachon, D. D., & Aalsma, M. C. (2012). Negative affect and emotion dysregulation: Conditional relations with violence and risky sexual behavior in a sample of justice-involved adolescents. *Criminal Justice And Behavior*, 39(10), 1316-1327.
- Miller, W. R., Zweben, A., DiClemente, C. C., & Rychtarik, R. G. (1995). *Motivational enhancement therapy manual: A clinical research guide for therapists treating individuals with alcohol abuse and dependence*. Brattleboro, VT: NIH Publication
- Morehouse, E. R. (1989). Treating adolescent alcohol abusers. *Social Casework: The Journal of Contemporary Social Work*, 70, 355-363.
- Moyers, T. B., Martin, T., Manuel, J. K., Hendrickson, S. L., & Miller, W. R. (2005). Assessing competence in the use of motivational interviewing. *Journal of Substance Abuse Treatment*, 28(1), 19-26.
- National Institute on Alcohol Abuse and Alcoholism. (2004). *NIAAA council approves definition of binge drinking*. NIAAA Newsletter, Winter. Retrieved from [http://pubs.niaaa.nih.gov/publications/Newsletter/winter2004/Newsletter\\_Number3.pdf](http://pubs.niaaa.nih.gov/publications/Newsletter/winter2004/Newsletter_Number3.pdf)
- Neighbors, C., Larimer, M. E., Lewis, M. A. (2004). Targeting misperceptions of descriptive drinking norms: Efficacy of a computer-delivered personalized normative feedback intervention. *Journal of Consulting and Clinical Psychology*, 72(3), 434-447.

- Newburn, T., Shiner, M. (2001). *Teenage kicks? Young people and alcohol: A review of the literature*. Layerthorpe, York: Joseph Rowntree Foundation.
- O'Brien, M. C., McCoy, T. P., Champion, H., Mitra, A., Robbins, A., Teuschler, H., ... Durant, R. H. (2006). Single question about drunkenness to detect college students at risk for injury. *Academic Emergency Medicine*, 13(6), 629-636
- O'Rourke, H. P., & MacKinnon, D. P. (2015). When the test of mediation is more powerful than the test of the total effect. *Behavior Research Methods*, 47(2), 424-442.
- Patterson, C. M., & Newman, J. P. (1993). Reflectivity and learning from aversive events: Toward a psychological mechanism for syndromes of disinhibition. *Psychological Review*, 100, 716-736.
- Perkins, H. W. & Berkowitz, A. D. (1986). Perceiving the community norms of alcohol use among students: Some research implications for campus alcohol education programming. *International Journal of the Addictions*, 21, 961-976.
- Preacher, K. J., & Hayes, A. F. (2008). Contemporary approaches to assessing mediation in communication research. In A. F. Hayes, M. D. Slater, L. B. Snyder (Eds.), *The Sage sourcebook of advanced data analysis methods for communication research* (pp. 13-54). Thousand Oaks, CA US: Sage Publications, Inc.
- Pumphrey-Gordon, J. E., & Gross, A. M. (2007). Alcohol consumption and females' recognition in response to date rape risk: The role of sex-related alcohol expectancies. *Journal of Family Violence*, 22, 475-485. doi: 10.1007/s10896-007-9104-0
- Raths, L. E., Harmin, M., & Simon, S. B. (1966). *Values and teaching: Working with values in the classroom*. Columbus, OH: Charles Merrill Publishing Co.
- Rehm, J., Shield, K. D., Joharchi, N., Shuper, P. A. (2011). Alcohol consumption and the intention to engage in unprotected sex: Systematic review and meta-analysis of experimental studies. *Addiction*, 107, 51-59
- Rokeach, M. (1973). *The nature of human values*. New York, NY: Free Press
- Rosengard, C., Adler, N. E., Gurvey, J. E., Dunlop, M. V., Tschann, J. M., Millstein, S. G., & Ellen, J. M. (2001). Protective role of health values in adolescents' future intentions to use condoms. *Journal of Adolescent Health*, 29(3), 200-207.
- Rosengard, C., Adler, N., Millstein, S., Gurvey, J., & Ellen, J. (2004). Perceived STD risk, relationship, and health values in adolescents' delaying sexual intercourse with new partners. *Sexually Transmitted Infections*, 80(2), 130-137.
- Santrock, J. W. (1998). *Adolescence*. (7<sup>th</sup> ed.). Boston, MA: McGraw Hill Publishers.

- Schreiber, L. N., Grant, J. E., & Orlaug, B. L. (2012). Emotion regulation and impulsivity in young adults. *Journal of Psychiatric Research*, 46(5), 651-658.
- Schroder, K. E., Carey, M. P., & Vanable, P. A. (2003). Methodological challenges in research on sexual risk behavior: I. Item content, scaling, and data analytical options. *Annals of Behavioral Medicine*, 26(2), 76-103. doi:10.1207/S15324796ABM2602\_02
- Schwartz, S. H. (1994). Are there universal aspects in the structure and contents of human values? *Journal of Social Issues*, 50(4), 19-45.
- Schwartz, S. H. (2007). Value orientations: Measurement, antecedents and consequences across nations. In R. Jowell, C. Roberts, R. Fitzgerald, & G. Eva (Eds.), *Measuring Attitudes Cross-Nationally: Lessons from the European Social Survey* (pp. 169-203). London, UK: Sage
- Schwartz, S. H. & Inbar-Saban, N. (1988). Value self-confrontation as a method to aid in weight loss. *Journal of Personality and Social Psychology*, 54, 396-404.
- Scott-Sheldon, L. J., Carey, K. B., Elliot, J. C., Garey, L., & Carey, M. P. (2014). Efficacy of alcohol interventions for first-year college students: A meta-analytic review of randomized controlled trials. *Journal of Consulting and Clinical Psychology*, 82(2), 177-188
- Seth, P., Wingood, G. M., DiClemente, R. J., & Robinson, L. S. (2011). Alcohol use as a marker for risky sexual behaviors and biologically confirmed sexually transmitted infections among young adult African-American women. *Women's Health Issues*, 21(2), 130-135.
- Shih, R. A., Miles, J. V., Tucker, J. S., Zhou, A. J., & D'Amico, E. J. (2012). Racial/ethnic differences in the influence of cultural values, alcohol resistance self-efficacy, and alcohol expectancies on risk for alcohol initiation. *Psychology of Addictive Behaviors*, 26(3), 460-470.
- Shrier, L. A. & Crosby, R. (2003). Correlates of sexual experience among a nationally representative sample of alternative high school students. *Journal of School Health*, 73(5), 197-200
- Selby, E. A., Bulik, C. M., Thornton, L., Brandt, H. A., Crawford, S., Fichter, M.M... Joiner, T. E. Jr. (2010) Refining behavioral dysregulation in borderline personality disorder using a sample of women with anorexia nervosa. *Personality Disorders: Theory, Research, and Treatment*, 1(4) 250-257.
- Smith, G. T., & Anderson, K. G. (2001). Personality and learning factors combine to create risk

- for problem adolescent drinking. In P. M. Monti, S. M. Colby, & T. A. O’Leary (Eds.), *Adolescents, alcohol, and substance abuse: Reaching teens through brief interventions* (pp. 109–141). New York, NY: Guilford Press.
- Smith, G. T. & Goldman, M. S. (1994). Alcohol expectancy theory and the identification of high-risk adolescents. *Journal of Research on Adolescence*, 4, 229-247.
- Stewart, D. G., Moise-Campbell, C., Chapman, M. K., Varma, M., Lehinger, E. (2016). The effectiveness of a school-based intervention for adolescents in reducing disparities in the negative consequences of substance use among ethnic groups. *Journal of Racial and Ethnic Health Disparities*. Advance online publication. doi: 10.1007/s40615-016-0233-0
- Stueve, A. & O’Donnell, L. N. (2005). Early alcohol initiation and subsequent sexual and alcohol risk behaviors among urban youths. *American Journal of Public Health*, 95(5), 887–893.
- Substance Abuse and Mental Health Services Administration. (2015) National Survey on Drug Use and Health. Retrieved from: <https://www.samhsa.gov/data/population-data-nsduh/reports?tab=38>
- Tarter, R. E., Horner, M., & Ridenour, T. (2012). Developmental perspective of substance use disorder etiology. In H. J. Shaffer, D. A. LaPlante, S. E. Nelson (Eds.), *APA addiction syndrome handbook, vol. 1: Foundations, influences, and expressions of addiction* (pp. 261-287). Washington, DC: American Psychological Association. doi:10.1037/13751-014
- Thatcher, D. L., & Clark, D. B. (2008) Adolescents at risk for substance use disorders: Role of psychological dysregulation, endophenotypes, and environmental influences. *Alcohol Research and Health*, 31(2), 168-176.
- Toler, C. (1975). The personal values of alcoholics and addicts. *Journal of Clinical Psychology*, 31, 554-557.
- Tollman, E. C. (1932). *Purposive behavior in animals and man*. New York, NY: Century.
- Torelli, C.J. & Kaikati, A.M. (2009). Values as predictors of judgments and behaviors: The role of abstract and concrete mindsets. *Journal of Personality and Social Psychology*, 96(1), 231-247.
- Toomey, T. L., Nelson, T. F. and Lenk, K. M. (2009), The age-21 minimum legal drinking age: A case study linking past and current debates. *Addiction*, 104: 1958–1965.
- Tull, M. T., Weiss, N. H., Adams, C. E., & Gratz, K. L. (2012). The contribution of emotion regulation difficulties to risky sexual behavior within a sample of patients in residential substance abuse treatment. *Addictive Behaviors*, 37(10):1084-1092.

- Wagener, T. L., Leffingwell, T. R., Mignogna, J., Mignogna, M. R., Weaver, C. C., Cooney, N. J., & Claborn, K. R. (2012). Randomized trial comparing computer-delivered and face-to-face personalized feedback interventions for high-risk drinking among college students. *Journal of Substance Abuse Treatment, 43*(2), 260-267
- Wagner, E. F., Brown, S. A., Monti, P. M., Myers, M. G., & Waldron, H. B. (1999). Innovations in adolescent substance abuse intervention. *Alcoholism: Clinical and Experimental Research, 23*, 236-249.
- Walsh, K., Danielson, C. K., Sales, J. M., Brown, J. L., Wingood, G. M., & DiClemente, R. J. (2012, November). *Genetic predictors of high-risk sexual behavior among African American adolescent girls and young women: Results from a latent class analysis*. Research presented at the annual convention of the Association for Behavioral and Cognitive Therapies, National Harbor, MD.
- Walters, S. T., Miller, E., Chiauuzzi, E. (2005). Wired for wellness: E-Interventions for addressing college drinking. *Journal of Substance Abuse Treatment, 29*, 139–145
- Walters, S. T. & Neighbors, C. (2005). Feedback intervention for college alcohol misuse: What, why and for whom? *Addictive Behaviors, 30*, 1168–1182.
- Walters, S. T., Vader, A.M., & Harris, T. R. (2007). A controlled trial of web-based feedback for heavy drinking college students. *Prevention Science, 8*, 83-88.
- Walters, S. T., Vader, A. M., Harris, T. R., Field, C. A., & Jouriles, E. N. (2009). Dismantling motivational interviewing and feedback for college drinkers: A randomized clinical trial. *Journal of Consulting and Clinical Psychology, 77*(1), 64-73.
- Wechsler, H., Nelson, T. F. (2001). Binge drinking and the American college student: What's five drinks?. *Psychology of Addictive Behaviors, 15*(4), 287-291.
- Weist, M. D., Stiegler, K., Stephan, S., Cox, J., & Vaughan, C. (2010). School mental health and prevention science in the Baltimore City schools. *Psychology in the Schools, 47*(1), 89-100.
- Whitbeck, L. B., Yoder, K. A., Hoyt, D. R., & Conger, R. D. (1999). Early adolescent sexual activity: A developmental study. *Journal of Marriage and the Family, 61*, 934–946, doi:10.2307/354014
- White, A., & Hingson, R. (2013). The burden of alcohol use: excessive alcohol consumption and related consequences among college students. *Alcohol Research, 35*, 201-218
- White, H. (2006). Reduction of alcohol-related harm on United States college campuses: The use of personal feedback interventions. *International Journal of Drug Policy, 17*(4), 310-219
- White, H.R. & Labouvie, E.W. (1989). Toward the assessment of adolescent problem drinking.

- Journal of Studies on Alcohol* 50, 30-37.
- Whiteside, S. P., & Lynam, D. R. (2001). The Five Factor Model and impulsivity: Using a structural model of personality to understand impulsivity. *Personality and Individual Differences*, 30(4): 669-689.
- Wills, T. A., Pokhrel, P., Morehouse, E., & Fenster, B. (2011). Behavioral and emotional regulation and adolescent substance use problems: A test of moderation effects in a dual-process model. *Psychology of Addictive Behaviors*, 22(2), 279-292.
- Windle, M. & Zucker, R. A. (2010). Reducing underage and young adult drinking: How to address critical drinking problems during this developmental period. *Alcohol Research and Health*, 33, 29-44.
- Winters, K. C., Botzet, A. M., Fahnhorst, T., Baumel, L., & Lee, S. (2009). Impulsivity and its relationship to risky sexual behaviors and drug abuse. *Journal of Child and Adolescent Substance Abuse*, 18(1), 43-56.
- Winters, K. C., Fahnhorst, T., Botzet, A., Lee, S., & Lalone, B. (2012). Brief intervention for drug-abusing adolescents in a school setting: Outcomes and mediating factors. *Journal of Substance Abuse Treatment*, 42(3), 279-288.
- World Health Organization. (2011). *Young people: Health risks and solutions* (Fact Sheet No. 345). Retrieved from <http://www.who.int/mediacentre/factsheets/fs345/en/>.
- Young, R. & Knight, R. C. (1989). The Drinking Expectancy Questionnaire: A revised measure of alcohol-related beliefs. *Journal of Psychopathology and Behavior Assessment*, 11, 99-112.
- Zastrow, C. H. & Kirst-Ashman, K. K. (2004). *Understanding human behavior and the social environment* (6<sup>th</sup> ed.). Belmont, CA: Thomas Learning, Inc.