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Does Use of Neutralization Techniques Predict
Delinquency and Substance Use Outcomes?

Erin Christine Siebert

A dissertation submitted in partial fulfilment
of the requirements for the degree of

Doctor of Philosophy

In

Clinical Psychology

Seattle Pacific University

School of Psychology, Family, & Community

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Dedication

This manuscript is dedicated to my parents; I would be nowhere without their love, guidance, and support. I also dedicate this work to my grandma, whose memory reminds me to be brave in all that I do.

Acknowledgment

Thank you to the Paul Lee Foundation for financially providing for this research. It is my hope that this project honors Paul's memory by contributing to research on violence and preventing future tragedies like the SPU campus shooting. I would also like to recognize my friends and family who have listened to me grumble for six years about graduate school. It takes a village to raise a child but an even bigger support network to finish a dissertation. Finally, my sincerest thanks go to Dr. David G. Stewart and the Stewart RVT. Dave swooped me up like I was one of his own and never looked back. His unconditional negative regard allowed me to move past my mistakes and his unconditional positive regard made me feel like I could do anything. Thanks to the team for filling every Friday (or FriDave) with laughter.

Erin C. Siebert

Word Count: 350

Abstract

This study was part of a larger research intervention that uses motivational interviewing (MI) as part of an in-school substance abuse intervention in local high schools in the greater Seattle area. Our aim was to test hypothesized relationships between marijuana use, other delinquent behavior, and neutralization techniques used by participants and determine their impact on the effectiveness of an MI-based intervention. Hypotheses were that neutralization technique use would decrease the effectiveness of an MI intervention due to the conflicting cognitive processes of justification and developing discrepancy. Of the 84 participants that completed Intake assessments, 60% were male and identified as an ethnic minority sample: Caucasian/White = 34%; African American/Black = 16%; Hispanic/Latin@ = 16%; Asian American/Asian = 8%; multiethnic = 8%. Forty-eight students completed Week 8 Follow Up assessments. Substance abuse was measured using the Customary Drinking and Drug Use Record (CDDR; Brown et al., 1998). Delinquency was measured using a revised version of the Late Adolescent Delinquency Scale (LADS; McCartan, 2007). Neutralization technique use was measured using a revised version of the Inventory of Neutralization Techniques (Ball, 1996; Ball, 1973; Mitchell & Dodder, 1983; Shields & Whitehall, 1994). Hierarchical linear regression analyses revealed that alcohol use at intake significantly predicted alcohol use at Week 8 Follow Up, $F(1,47) = 8.503, p = .005$ and accounted for approximately 16% of the model variance. Adding total neutralization to the model also yielded significant outcomes and accounted for 24% of the total variance, $F\Delta(2,46) = 4.835, p = .033$. Data showed similar findings for marijuana, with Intake marijuana use predicting use at Week 8 Follow Up, $F(1,47) = 9.542, p = .003$, and accounting for

approximately 18% of the model variance. Including total neutralization to this model also provided significant outcomes and accounted for 26% of the variance, $F\Delta(2,46) = 4.611, p = .037$. Including delinquency did not significantly contribute to either regression model. Because neutralization technique use was hypothesized to be the mechanism that interfered with the effectiveness of MI, understanding these participants' cognitive strategies will be valuable in determining the most effective type of substance use treatment for each student.

Keywords: substance use, neutralization techniques, delinquency, adolescents

Chapter I

Introduction and Review of Literature

Purpose

Onset of substance use in youth is common and problematic (Eaton et al., 2012; McCarty et al., 2013). For example, 15% of teens will meet criteria for Alcohol Use Disorder by the time they reach the age of 18 according to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM 5; American Psychiatric Association, 2013; Miranda et al., 2014). Despite legal barriers and known negative outcomes of substance use, juvenile alcohol involvement persists (Kia-Keating, Brown, Schulte, & Monreal, 2009). Juveniles also engage in other delinquent behavior that is harmful not only to themselves but to society as well (Church et al., 2012). From my own clinical experience, providing effective treatment for adolescents who use substances or engage in delinquent behavior is difficult, and treating them for both is an even more daunting task. Youth with co-occurring problems have a poorer prognosis than those with only one area of difficulty, such as in the case of Conduct Disorder and depression (Vander Stoep et al., 2012), and screening for any co-occurring symptoms is recommended (Mezulis, Vander Stoep, Stone, & McCauley, 2011). Increasing our knowledge of the thoughts and behaviors of those adolescents with comorbid substance use and delinquent behavior will affect the development of treatment programs. By understanding their initial presentation to treatment, programs may be tailored to meet students' individual needs and to manage their behavior effectively. The purpose of this study was to determine whether specific criminogenic mechanisms impact the effectiveness of a motivational interviewing (MI) based intervention for high school students with co-occurring substance use and conduct problems.

Delinquent behavior is frequently comorbid with substance use (Myers, Stewart, & Brown, 1998), which was treated in this study with a school-based substance use intervention that utilized MI with behavioral components to incite change. However, MI tends to be unsuccessful for those who engage in delinquent behaviors and who may even be diagnosed with Conduct Disorder (Larimer, Palmer, & Marlatt, 1999; Salekin, 2012). It has been suggested that the ineffectiveness of MI arises from a criminogenic thinking pattern (cognitive patterns that are likely to cause criminal behavior) in those with Conduct Disorder or life-course persistent delinquency (Moffitt, 1993, 2003). The use of cognitive strategies called neutralization techniques (Sykes & Matza, 1957) may be a contributing factor to the criminogenic thinking of those individuals who have been negatively impacted by their delinquent behavior, and who possibly reach the threshold of Conduct Disorder. These techniques, such as denial of the victim and condemnation of the condemner, allow for the dissolution of guilt felt by those who have engaged in delinquent behavior and to justify their actions despite their knowledge of societal laws and values. By examining the impact of neutralization technique use on both substance use and delinquency over time, this approach could have significant clinical value for substance use interventions. If the use of neutralization techniques aids in explaining why a school-based MI substance use intervention is not as effective, for youth with delinquent behavior, interventionists may be able to achieve successful outcomes using alternative strategies.

Problem Behavior Theory

One method of understanding and conceptualizing adolescent substance abuse and other delinquent behavior is through Problem Behavior Theory. Jessor and Jessor (1977) presented their Problem Behavior Theory as “neither a grand nor overarching theory” (p. 17) but as a modest concept of the concerning problem behavior of youth. Since its development, Problem

Behavior Theory has continued to remain relevant in a host of contexts, such as problematic internet use (De Leo & Wulfert, 2013), bullying (Lester, Cross, & Shaw, 2012), and gambling (Zangeneh, Mann, & McCready, 2010). The authors maintain that the term ‘problem behavior’ does not include their own values and judgments, but rather refers to what each society has deemed to be problematic, despite potentially benign consequences of such behavior. Jessor and Jessor posited that this problem behavior is likely well-known by the youth to be against society’s norms and values—something they have learned through socialization. The authors indicated that their theory stems from social learning, the environment, and cognitions of the self and others rather than genetic propensities or deep-seated psychological drives. The theory is organized into three systems: personality; perceived environment; and behavior. Together, the interaction of these systems will result in greater or lesser delinquent behavior. Figure 1 depicts Jessor and Jessor’s (1977) conceptual structure of this theory.

In the personality system, Jessor and Jessor (1977) describe motivational-instigation, personal belief, and personal control facets. They illustrate the motivational-instigation component as the goals toward which the youth strives and the pressure that initiates action towards achievement of such goals. Value placed on the goal, in combination with the expectation of success in realizing the goal, creates the motivation and influence whether behavior toward the goal will occur. Goals of academic achievement, peer affection, and independence were rated most highly by juveniles. The personal belief component refers to the cognitive controls exerted by the youth to restrain themselves from engaging in problem behavior. These controls stem from various beliefs about the self, their society, and their role in society. Four variables are contained within this component: social criticism (acceptance of values and norms in society); alienation (a sense of isolation from others and insignificance of

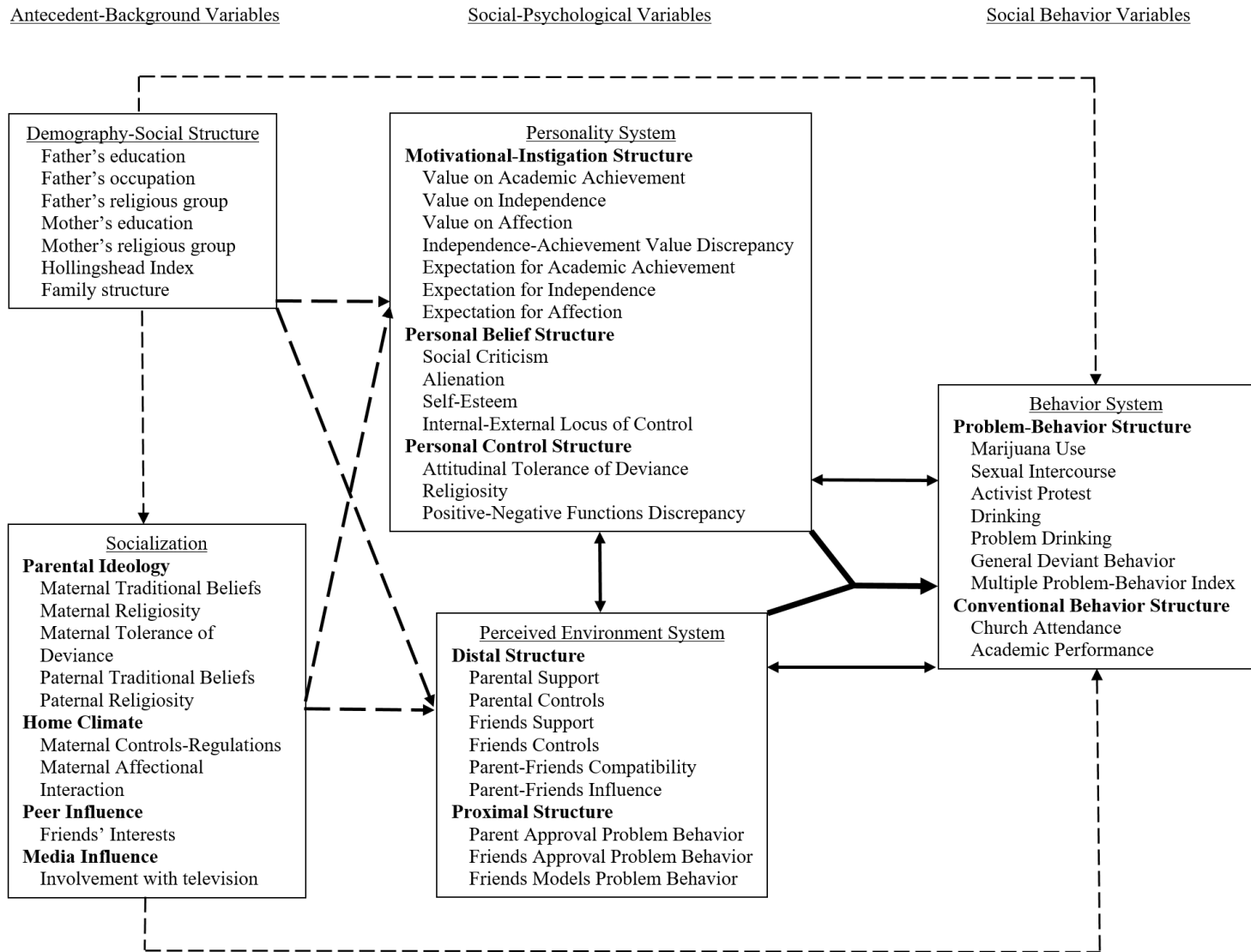


Figure 1. Conceptual structure of Problem Behavior Theory.

daily activities); self-esteem (with low self-esteem, the youth finds problem behaviors do not make them vulnerable because they have nothing to lose); and internal-external locus of control (internal, referring to a sense of personal obligation and motivation to adhere to rules in the larger society, and external, referring to behavior being dependent on the environment). Finally, the personal control structure is described as the direct control against engaging in non-conforming behaviors. This component is noted to be different from the personal belief structure in the proximity of the beliefs to the behavior. In the personal control structure, the variables refer to the delinquent behaviors themselves and not the indirect consequences of such behaviors, as in the personal belief structure. The three variables in the personal control structure are attitudinal tolerance of deviance, religiosity, and the divergence of positive and negative functions and consequences of the problem behavior.

The perceived environment was set as the second structure of the Problem Behavior Theory. The authors reported their reasoning behind studying perceived environment rather than environment alone was because the environment has meaning for each individual as they move through it. The two variables within this structure are distal and proximal factors of the perceived environment. The distal component includes variables within the environment that do not directly affect the problem behavior, but are linked nonetheless. The distal structure has the following variables within it: perceived support from parents and friends; compatibility in parent and friend expectations for the youth; perceived controls from friends and family; and perceived influence on the youth from parents in relation to their friends. In contrast, the proximal component refers to variables that directly affect problem behavior. Three variables exist within the proximal component: friends' approval for the behavior; parents' approval for the behavior; and friends' models for problem behavior.

The third structure in Jessor and Jessor's (1977) Problem Behavior Theory is the behavior system. This has been divided into the problem-behavior structure and the conventional behavior structure. In the problem-behavior structure, the behavior is considered to be inappropriate and departing from societal norms. Such behavior may incite attempts at controlling the behavior, in addition to an expression of disapproval from others within that society. An example of problematic behavior is consumption of illicit substances. On the other hand, the conventional behavior structure is the behavior that garners social approval and that is normatively expected. An example of conventional behavior is involvement with a church or other religious activities.

Theoretical Relevance to Substance Use and Delinquency

Problem Behavior Theory presents a psychosocial model depicting the precursors to behavior problems of substance use and delinquency. Motivational factors to use substances tend to be high in our school-based substance use intervention sample, especially when given peer influence and expectation, and discrepancies between parental and youth's expectations for the youth's behavior. Furthermore, the majority of adolescents who commit delinquent acts use substances prior to the commission of their behavior (Huizinga, Menard, & Elliott, 1989; Stein et al., 2006). Problem Behavior Theory presents the various structures that enable or prohibit engagement in delinquent and problematic behavior as well. The adolescents seen in this school-based substance use intervention vary, but they likely have high motivation to participate in delinquent acts when we first see them, as well as personal beliefs regarding the behavior, and low personal control. If their personality factors do not incite problem behavior, factors of their environment likely will. Perceived support and expectations from parents and friends may be driving influences on these youths to engage in delinquent behavior.

Substance Use in Adolescence

Underage and illicit substance use is cited as problem behavior per Jessor and Jessor (1977) and it is likely well-known to adolescents to be against mainstream values. Studies have demonstrated that an earlier age of illicit substance use is associated with a higher risk of developing a substance use disorder later in life (Hanson, Cummins, Tapert, & Brown, 2011; Hopfer et al., 2013). Some researchers have posited that the early use of substances, particularly alcohol, leads to an alteration in the developing adolescent brain, which then impacts developmental trajectories (Hanson et al., 2011). Others have theorized that early substance use is simply a marker for other risky behaviors that increase the risk of developing a substance use disorder (Hopfer et al., 2013; Odgers et al., 2008). Substance using adolescents have demonstrated differences in brain structure and functioning relative to adolescents who do not use substances (Hanson et al., 2011). Contrasts may be seen in tasks of spatial working memory, verbal encoding, verbal and non-verbal memory, executive functioning, and processing speed, among myriad other realms of functioning. Further complicating the picture is the lower level of motivation to change substance use behaviors in adolescents than in adults (Kia-Keating et al., 2009). Youth are invested in participating in substance use when they perceive it to be normative among their peers and are therefore resistant to substance use treatment programs. However, substance use interventionists are motivated to engage adolescents in treatment for precisely the aforementioned reasons.

Delinquency in Adolescents

Besides substance use, adolescents may engage in other problematic or illegal behaviors that are a cause for clinical concern. Adolescent delinquency is a concept strongly associated with risk for substance abuse and dependence later in life (Fergusson, Horwood, & Ridder,

2007). Early adolescent substance use has been shown to predict development of subsequent delinquent behaviors as well (Wymbs et al., 2014). Delinquency is a broad term referring to minor criminal behavior typically engaged in by those who have not yet reached adulthood. Examples of such behavior may include shoplifting, vandalism, truancy, or substance abuse (Jessor & Jessor, 1977). Despite decades of intervention and research on this topic, juvenile delinquency persists (Church et al., 2012). Many of these behaviors may overlap with the diagnostic criteria for Conduct Disorder in the DSM 5 (American Psychiatric Association, 2013). Individuals with this disorder must demonstrate a persistent pattern of violating the rights of others and engaging in behavior against societal norms. They must also exhibit three or more criteria in the past year of behaviors in the following categories: aggression to people and animals (e.g., bullies others, has been physically cruel to animals, has forced someone into sexual activity); destruction of property (e.g., has deliberately engaged in fire setting, has deliberately destroyed other's property); deceitfulness or theft (e.g., has broken into someone else's house, often lies to obtain goods or favors, has stolen items of nontrivial value); and serious violations of rules (e.g., often stays out at night despite parental prohibitions, has run away overnight at least twice, is often truant from school). Specifiers may be used to denote age of onset: childhood-onset type (one criterion met before the age of 10 years) and adolescent-onset type (absence of any criteria before the age of 10 years). However, for the theoretical purposes of this study, I am examining the pattern of rule-breaking that would be considered 'delinquent' and that does not necessarily meet the criteria for Conduct Disorder. I offer this description of Conduct Disorder as an example of how delinquent behavior might present clinically but recognize that few adolescents with delinquent behavior meet criteria for this disorder. Instead, it is more likely that adolescents who present for substance use treatment also

have co-occurring delinquent behavior that does not meet the threshold for a Conduct Disorder diagnosis.

Motivational Interviewing

Motivational Interviewing is a clinical method for increasing motivation for change that was developed by Miller and Rollnick (2013) and is clinically employed to decrease substance use. These clinicians define their approach as, “a client-centered, directive method for enhancing intrinsic motivation to change by exploring and resolving ambivalence” (p. 25, Miller & Rollnick, 2013). The practice of MI exists to engender change in individuals who may be experiencing ambivalence about their behavior. In a treatment setting, it is a style of speaking with a client in such a way that builds motivation. At its core, MI utilizes three key components: collaboration, evocation, and autonomy (Miller & Rollnick, 2013). Collaboration refers to the partnering of the client with the clinician in a supportive manner. The clinician does not take on an authoritarian role, but rather honors the client’s experiences and perspective. Evocation signifies the clinician’s method of eliciting responses from the client instead of imparting their own opinions. The clinician does not seek to educate the client, but to draw out the answers that are assumed to be within the client throughout. Finally, autonomy indicates that the client is ultimately responsible for his or her own change, and the clinician affirms their capacity for self-direction. The clinician does not tell the client what to do, but rather facilitates an informed choice generated by the client. Specific techniques used in therapy with a client are asking open-ended questions, affirming the client, reflecting their sentiments back to them, and summarizing what has been said.

Using these skills, the clinician follows four general principles during treatment: express empathy; develop discrepancy; roll with resistance; and support self-efficacy. To express

empathy, the clinician actively listens to the client and seeks to understand the client's experience without judgment. The clinician may accept what the client says without having to agree with their statements. Being understood and not criticized enables the client to feel free to change, while blaming the client halts the change process. Development of discrepancy involves the reflection of the client's current experience alongside their goals and values and simply noting the incongruity. By finding what is important to the client and reflecting the ways in which their behavior diverges from their goals, the clinician can increase motivation to change without the use of coercion. Rolling with resistance again allows for the client to feel understood and not pressured to change. Clients are invited to think about new perspectives and they are believed to be their own resource to generate their solution. Resistance may also be a sign for the clinician that the current approach may need to be modified. Finally, supporting self-efficacy is key in generating change. While clients are responsible for producing their own answers, they are also considered capable to carry out their decisions. The clients' confidence in their ability to make a change in their behavior is vital in the creation of motivation.

Little is known about the precise mechanisms of change in MI (Apodaca & Longabaugh, 2009), but it is a method that is widely used and effective in a treatment setting (Macgowan & Engle, 2010). While originally developed to treat substance use, MI has been used to decrease other problem behaviors (e.g. gambling or risky sexual behaviors) and to increase positive behaviors (e.g. exercise and medication adherence), demonstrating its generalizability (Miller & Rose, 2009). Miller postulates that it is both the relational and technical aspects of MI that converge to create the effectiveness of this technique. The relational component includes expressing empathy and seeking to understand without judgment, and the technical component refers to development of discrepancy, evoking change talk, and reinforcing positive change. A

focus on the client's values may also increase motivation by shifting their perspective to areas of more importance than their current problematic behavior (Miller & Rollnick, 2013). The use of MI has been greatly supported in treating alcohol use disorders (Apodaca & Longabaugh, 2009; Macgowan & Engle, 2010), and is the basis for the school-based substance use intervention of the current study.

Neutralization Theory

While Problem Behavior Theory captures the environmental and social influences on adolescent substance use and other delinquent behavior, a cognitive component also likely accompanies these behaviors. A personal anecdote that led to this hypothesis is from when I was an interventionist for Project READY, the in-school substance use intervention from which this study is based. When asking the students if they engaged in any illegal behavior many students would laugh and say, "you mean besides drinking/smoking marijuana?!" and laugh. They had clearly created a distinction between delinquent behavior and their own substance use that is seen as problematic by many others. Neutralization Theory provides a rationale for this type of cognitive strategy to justify certain behaviors while refraining from others.

Early delinquency researchers postulated that individuals who participated in delinquent acts replaced the values and morals of the mainstream culture with those of their delinquent subculture (e.g. Cohen, 1955). Sykes and Matza (1957) rejected this hypothesis because they thought the ability of subcultures of delinquency to overpower the norms of the mainstream culture was overemphasized (Christensen, 2010). Sykes and Matza rejected previous theories of delinquency and deviance (used interchangeably in this literature) primarily because research had shown that those who participated in delinquent behaviors demonstrated higher levels of guilt regarding those behaviors. Sykes and Matza proposed that if those individuals had

completely abandoned the values of the dominant culture and replaced them with values of a deviant or delinquent subculture, they would not experience such guilt. This, Sykes and Matza suggested, was evidence for the utilization of cognitive techniques they called neutralization, to reduce the guilt individuals felt when their behavior was at odds with societal norms. This idea they called neutralization theory.

Neutralization techniques were defined by Sykes and Matza (1957) as “justifications for deviance that are seen as valid by the delinquent but not by the legal system or society at large” (pp. 666). The authors postulated that people use up to five neutralization techniques when engaging in delinquent acts: denial of injury (no injury was intended, or the behavior resulted in minimal injury), denial of responsibility (the behavior was out of their control or accidental), denial of the victim (victims are either absent, unknowing, or deserve the results of the behavior), condemnation of the condemners (those who disapprove of the behavior are likely not following society’s morals in some way as well), and appeal to higher loyalties (the delinquent behavior was prompted by more senior members of a group to which the individual belongs). When juveniles consider committing acts of deviance, they preemptively use these cognitive strategies to neutralize the guilt associated with doing something they know to be against society’s norms. By using techniques of neutralization, these youth are able to drift between behavior that is delinquent and conventional. This theory appears to hold also because people are typically not constantly offending but rather waver between responsible and irresponsible behaviors (McGregor, 2008).

Since its publication, Sykes and Matza’s theory has generated an increase in the study and publication of neutralization technique research in the deviance literature and evidence has continued to be presented affirming this theory’s explanation of deviance. Neutralization theory

was originally constructed for youth in juvenile detention or who have received other serious consequences for their behavior, but has since been applied to myriad criminological areas: from shoplifting to genocide to pedophilia (Christensen, 2010; Morris & Copes, 2012), and it has been used to understand behavior of animal rights activists (Liddick, 2013), unethical consumer behavior (De Bock & Van Kenhove, 2011; McGregor, 2008), and theft from the workplace (Shigihara, 2013).

Sykes and Matza (1957) conceived of techniques of neutralization as being used to diminish internal negative self-conceptions (Copes, 2003). For those who have maintained some level of attachment to society's norms and values, which Sykes and Matza postulate includes most offenders, using neutralizations is a mechanism for reducing the cognitive dissonance surrounding a criminal or otherwise deviant act. Techniques of neutralization differ from rationalizations in the function and timing of their arrival (Fritzsche, 2005). Rationalizations are said to occur after a behavior to create meaning for the individual who may have otherwise seen that behavior as against their personal or societal beliefs. Neutralizations, on the other hand, occur before the behavior, and are used to enable the behavior (Liddick, 2013).

Since the conception of neutralization theory, researchers have continued to find evidence supporting this theory, and proposed additional applications for techniques of neutralization. If an offender (or someone involving him/herself in delinquent behavior) is experiencing low levels of societal attachment, he or she may not feel enough guilt to need to use neutralization techniques or may have learned other effective ways in which to cope with guilt that they do feel. However, neutralization techniques may be used instead to create a positive self-image for those in society who may judge them for their actions; use of techniques of neutralization allows for the management of an offender's social identity (Copes, 2003). Furthermore, the offenders who

are more attached to their society's norms and values use more techniques of neutralization than those who are less attached to society and therefore do not have as much guilt about breaking rules or laws that needs neutralizing.

Most commonly used technique in those with high rates of offending was denial of a victim. In two studies, researchers found that two-thirds of their sample used one neutralization technique, and one third of their sample used two or more techniques of neutralization. The most commonly used technique in those with high rates of offending was denial of a victim (Copes, 2003; Liddick, 2013). Copes (2003) also found that denial of injury was the most common technique used for those with low rates of offending. Number of neutralization techniques used did not differ between high and low rate offenders, dispelling the myth that only low frequency offenders feel the need to neutralize their guilt related to their committed offense.

Frequency of offending is one feature of delinquency, and level of societal attachment of the offender may be another. Even when using the same neutralization techniques, more and less attached offenders were found to use these techniques in different ways. For example, when using the 'denial of the victim' strategy, highly attached offenders reported their victim to be foolish or careless, while minimally attached offenders indicated that their victim deserved what happened to them (Copes, 2003). Due to the vast applicability of this theory, techniques of neutralization are one of the most pervasive concepts in the research of delinquency and deviance (Christensen, 2010).

Utilizing Neutralization Theory in conjunction with Problem Behavior Theory, adolescent substance use and delinquent behavior can be explained by the cognitive strategies of neutralization techniques. It is possible that the understanding of adolescent use of neutralization techniques will impact the clinical course of their substance use intervention because this

intervention is designed to utilize MI to develop discrepancy and motivate change. Clients who use neutralization techniques already have a robust cognitive strategy to defend against the discrepancy they notice between being a good member of society and behaviors that go against that value, such as delinquent behavior and/or substance use. As clients who see their behavior as discrepant from the norm have likely built strong neutralization techniques, they may be less open-minded to developing discrepancy in their behavior, a fundamental feature of MI.

Current Study

The present study examined the effect that neutralization technique use had on substance use and other delinquent behavior outcomes. For adolescents who used higher levels of neutralization techniques, higher levels of substance use and delinquency were expected both at Time 1 (Intake) and Time 2 (Week 8 Follow Up) than in those who used fewer neutralization techniques. The school-based substance abuse intervention using MI was hypothesized to be more successful with those individuals who used fewer neutralization techniques because the students would be more receptive to MI when neutralization strategies were not in place. The use of neutralization techniques was hypothesized to minimize the ability to develop discrepancy between behavior and personal values, which was the core of the MI intervention. Depending on the level of neutralization use, the feedback that the clients receive may or may not have been powerful enough to overcome these cognitive strategies. Because delinquent behavior in youth can affect not only the individual's social and occupational trajectory but also the wellbeing of their community (Salekin, 2012), it is important to monitor the effectiveness of interventions for all intended participants. School-based substance use interventions that utilize MI as the mechanism for change have demonstrated success in reducing alcohol use in adolescents (Kia-Keating et al., 2009), despite the limited success of MI in reducing conduct problems for those

with Conduct Disorder (Larimer et al., 1999; Salekin, 2012). If usage of neutralization techniques blocks the success of MI used in a substance use intervention, clinicians may be able to generate and employ alternate strategies in decreasing their client's substance use.

Notable difficulties in studying neutralization techniques and delinquency include the complexity of establishing temporal order (as usage of neutralization techniques must come before the completion of the deviant behavior) and the stability of neutralization technique use over time (Morris & Copes, 2012). In the current study, use of neutralization techniques, delinquent behavior, and substance use were all measured at Time 1 and Time 2, allowing for the assessment of stability over time and consideration of establishing temporal order. Another hypothesized limitation of neutralization theory has been that the theory only holds for those who are at least moderately attached to society, and perhaps would not hold for unconventional criminals (Topalli, 2006). The current study will skirt this potential limitation, as the population sampled was adolescents who attend school and were not in juvenile detention, making it likely that they had a moderate to high level of societal attachment. Given the population, Sykes and Matza's (1957) Neutralization Theory was expected to hold in this study.

Hypotheses

Ten hypotheses were tested in this study: (1) Alcohol use at Time 1 will positively predict alcohol use at Time 2, (2) neutralization technique use at Time 1 will positively predict alcohol use at Time 2, (3) delinquent behavior at Time 1 will positively predict alcohol use at Time 2, (4) the combined effect of neutralization and alcohol use at Time 1 will positively predict alcohol use at Time 2, (5) the combined effect of neutralization and delinquent behavior at Time 1 will positively predict alcohol use at Time 2, (6) marijuana use at Time 1 will positively predict marijuana use at Time 2, (7) neutralization technique use at Time 1 will

positively predict marijuana use at Time 2, (8) delinquent behavior at Time 1 will positively predict marijuana use at Time 2, (9) the combined effect of neutralization and marijuana use at Time 1 will positively predict marijuana use at Time 2, and (10) the combined effect of neutralization and delinquent behavior at Time 1 will positively predict marijuana use at Time 2. The data are hypothesized to fit the models seen in Figure 2.

In the measure of delinquency, participants responded how often each of their delinquent acts were performed under the influence of substances so that substance-related delinquency could be compared with non-substance-related delinquency. The exploratory hypothesis was that participants who completed delinquent behavior under the influence of substances would report lower neutralization technique use than those who did not use substances while participating in delinquent behavior. Another exploratory hypothesis was that, for participants who use neutralization techniques, if their delinquency and substance use do reduce over time, their use of neutralization techniques will also reduce over time.

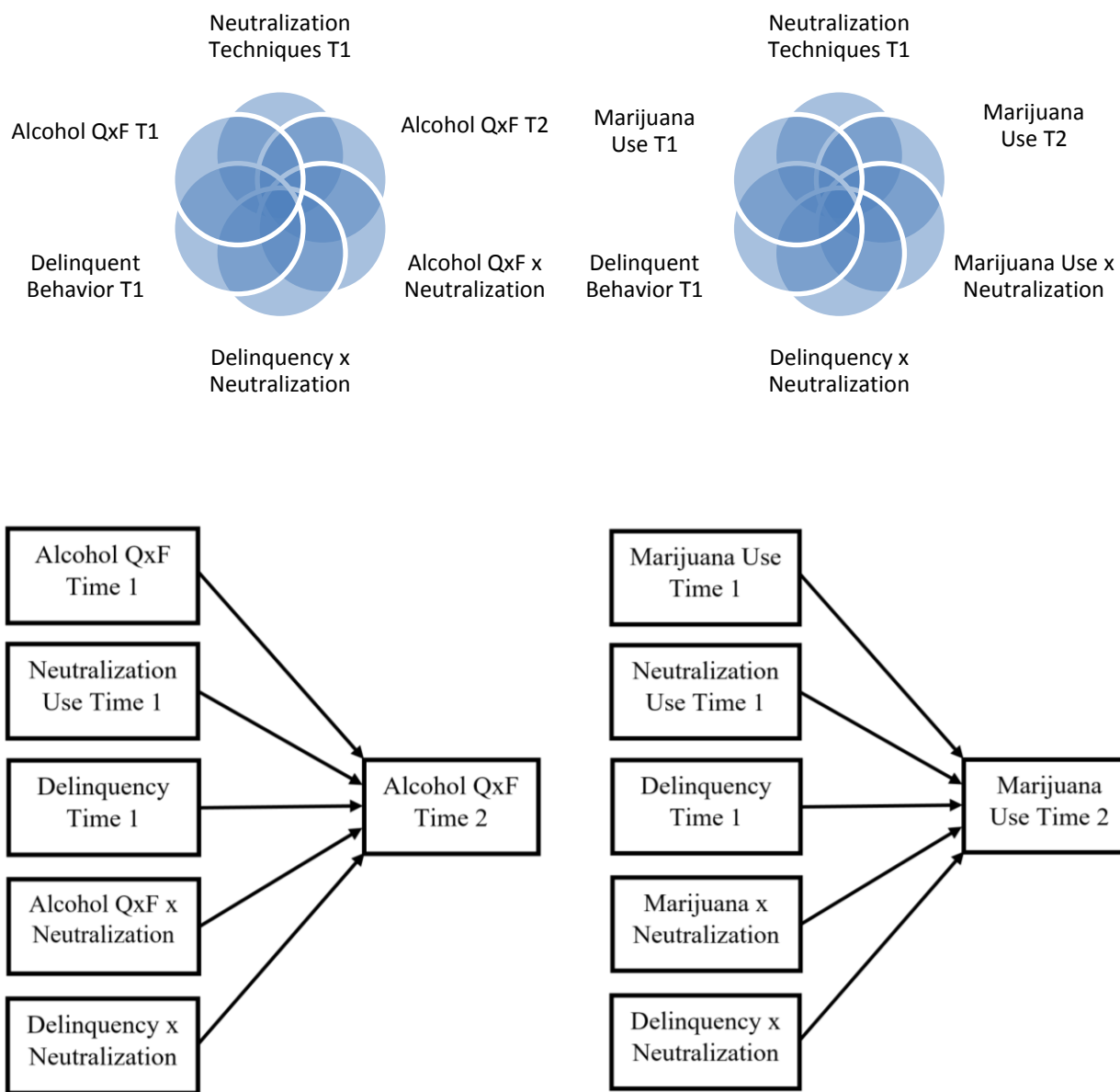


Figure 2. Visual models of neutralization, delinquency, and substance use variables.

Chapter II

Method

Sample

Participants were recruited through Project READY, an ongoing school-based substance use intervention that uses MI with behavioral components. For this current study, data were collected from September 2014 through June 2016. Clinical psychology doctoral students from a research lab in a private university in the Pacific Northwest are trained in MI and implement a school-based substance use intervention with adolescents in selected school districts in the surrounding area. Project READY is an eight-week intervention using MI techniques such as decisional balance, providing feedback, and creating a change plan. Students were referred by school staff and peers and were eligible if they have used drugs or alcohol in the last three months and are between the ages of 13 and 19. Individuals ages 13 or older are legally allowed to receive mental health treatment without parental consent in the state of Washington (Revised Code of Washington 71.34.530); though parental consent forms were offered to the students, their completion was not necessary to engage in treatment. In past years, the Project READY participants have been primarily male and of minority ethnic status. See Table 1 for demographics of the current study sample. During the first school year of data collection, intervention data were also collected by MI-trained undergraduate students at a public university in the local area. Baseline data were collected and, after the eight-week intervention, clients participated in a 12- and 16-week follow up session.

An a priori power analysis using G*Power 3.1.4 (Faul, Erdfelder, Buchner, & Lang, 2009) for the regression analyses indicated that a sample size of 62 participants was necessary in order to detect a Cohen's f^2 effect size of .15 when power was set at .80, and 81 participants was necessary when power was set at .90. These values were set according to findings in past neutralization technique research with small to medium effect sizes (Fritsche, 2005; Liddick, 2013).

Approximately 10 interventionists each year were expected to see an average of eight clients per year, yielding a potential sample of 80 clients in total per year. As data collection occurred over two school years, a proposed $N = 62-81$ was reasonable for this study. During the entire study, a total of 102 students were referred to the intervention, 90 students signed the intervention and research informed consents, and 84 participants completed Intake assessments with 48 participants completing Week 8 Follow Up assessments (see Figure 3 for a flowchart depicting the recruitment to intervention completion process). In the first year of data collection, 53 intakes and 28 Week 8 Follow Ups were completed (45% attrition), and in the second year, 31 intakes and 20 Week 8 Follow Ups were completed (35% attrition). See Table 2 for attrition data on each variable.

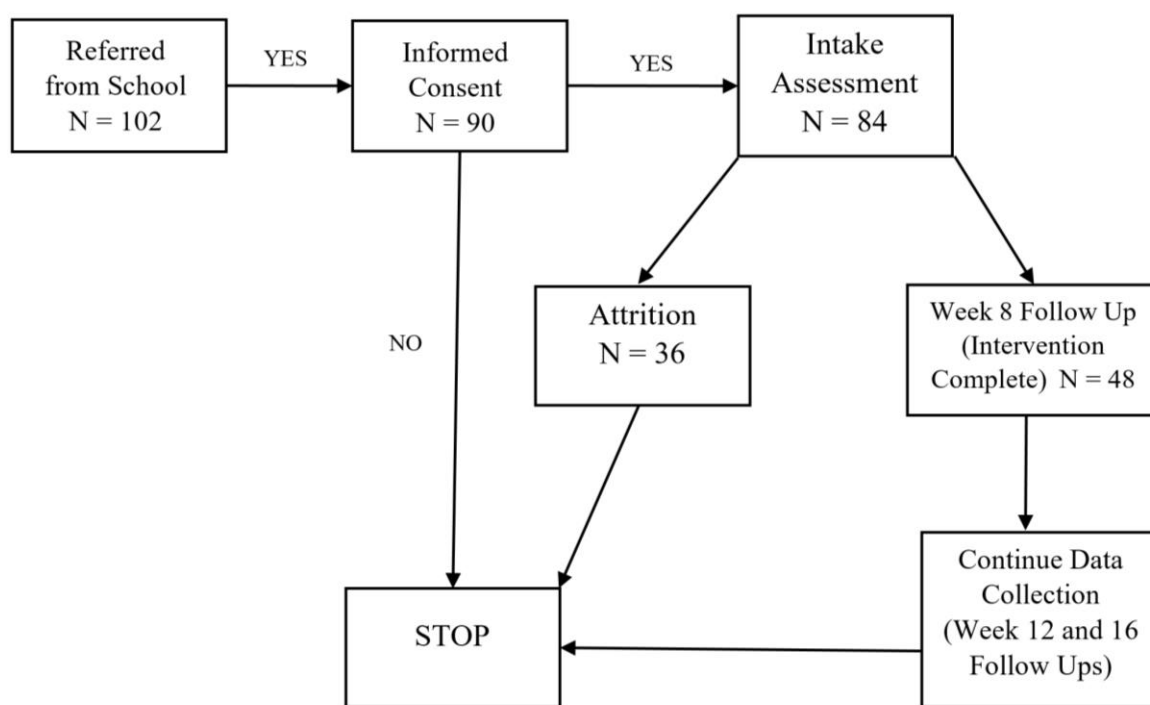


Figure 3. Intervention flowchart.

Table 1

Study Sample Demographics

| Demographic Variable | Percent (<i>N</i> = 84) |
|------------------------|--------------------------|
| Age | |
| 14 | 7 |
| 15 | 29 |
| 16 | 33 |
| 17 | 20 |
| 18 | 6 |
| 19 | 4 |
| Grade | |
| 9 | 14 |
| 10 | 42 |
| 11 | 24 |
| 12 | 19 |
| Gender | |
| Male | 60 |
| Female | 40 |
| Ethnicity | |
| Caucasian/White | 34 |
| African American/Black | 16 |
| Hispanic/Latin@ | 16 |
| Asian American/Asian | 8 |
| Multiethnic | 8 |

Table 2

Variable Differences between Treatment Completers and Non-Completers

| Variable | <i>M</i> (<i>SD</i>) | Test Value* | <i>p</i> Value |
|-------------------------------------|------------------------|-------------|----------------|
| Alcohol – Intake (square root) | | .506 | .614 |
| Treatment Non-Completers | 3.839 (3.428) | | |
| Treatment Completers | 3.403 (4.227) | | |
| Marijuana – Intake (square root) | | -.393 | .696 |
| Treatment Non-Completers | 3.491 (1.692) | | |
| Treatment Completers | 3.637 (1.677) | | |
| Delinquency – Intake (year, total) | | 1.853 | .070 |
| Treatment Non-Completers | 41.389 (46.397) | | |
| Treatment Completers | 25.479 (25.855) | | |
| Delinquency – Intake (3 mo., total) | | 2.418 | .020 |
| Treatment Non-Completers | 28.694 (36.824) | | |
| Treatment Completers | 13.125 (13.507) | | |

*Note: Independent-samples t-test, *df* = 82

Procedure

An ongoing concern in measuring neutralization techniques is the ability to test whether the cognitions occur before the behavior (Copes, 2003; Liddick, 2013). The consensus in the field is that, to distinguish neutralizations (thoughts occur before the behavior) from rationalizations (thoughts occur after the behavior), one must measure techniques use along with behavior over time (Fritsche, 2005). Therefore, substance use, delinquency, and neutralization techniques were assessed at Intake as well as at the 8 Week Follow Up session.

Students were referred to READY by teachers, school counselors, school staff members, friends, or themselves. Each interventionist had a list of student referrals at their assigned school. After the student was referred to Project READY, they met with an interventionist and sign informed consent for both the research and the clinical intervention. Students were eligible to participate in the intervention without having their data be collected for research. Student participation was voluntary and they were told that they could disenroll at any point in the intervention. The private university that was the primary source of interventionists in this study oversaw the human subjects treatment and approved the yearly Internal Review Board (IRB) application. Each school approved the Project READY intervention as well. Students would meet with the interventionist individually in an office or other confidential space (e.g. conference room) during the school day. At Intake, they completed the assessment of their substance use, delinquency, and neutralization techniques, along with the other measures implemented during that assessment session. During the ensuing feedback session, participants received the results of the assessments they completed during the first session. Students received feedback on their reported amount of substance use and their delinquent behavior based on their responses. In the following weeks, the clients received the manualized MI intervention; the interventionist would

request that the student be let out of his/her class to meet privately on a weekly basis to accomplish this process. If the student was unable to leave class to come to the session, the interventionist would wait until the next period and ask again for the student to come to see them. If the student was not in school that day, the interventionist would attempt to see the participant during the following week. After the completion of the intervention, the students then completed the substance use, delinquency, and neutralization technique use assessments at the Week 8 Follow Up session. In the second year of data collection, grant money was available to purchase Starbucks gift cards for the participants. Upon completion of the Week 8 Follow Up assessments, participants were given \$15 in gift cards. Table 3 demonstrates the time points for each measure as well as the scores yielded.

Table 3

Time Points and Scores Yielded for Each Measure

| <u>Scale</u> | <u>Intake</u> | <u>Week 8</u> | <u>Score Yielded</u> |
|--|---------------|---------------|--|
| Customary Drinking and Drug Report | X | X | Quantity multiplied by frequency for both alcohol and drug use |
| Late Adolescent Delinquency Scale – Intake version | X | | Behavior count for last year and last 3 months; percentage without substance use |
| Late Adolescent Delinquency Scale – 8 Week version | | X | Behavior count for last 3 months; percentage without substance use |
| Inventory of Neutralization Techniques | X | X | Total neutralization use (continuous); Use of each technique (Yes/No) |

Measures

Substance use. Alcohol and marijuana use was measured with the Customary Drinking and Drug Use Report (CDDR; Brown et al., 1998). This measure assesses both the quantity and frequency of alcohol and drug use, as well as symptoms of dependence and withdrawal and

substance-related consequences of use. The CDDR was administered to each participant at Intake and at the Week 8 Follow Up sessions. The CDDR has shown strong internal consistency, with high alpha coefficients for alcohol and drug dependence in substance abusing ($\alpha = .89$ and $.72$, respectively) and community ($\alpha = .78$ and $.85$, respectively) adolescents (Brown et al., 1998). It has also demonstrated high test-retest reliability for substance use (alcohol = $.83$, drugs = $.92$), dependence (alcohol = $.87$, drugs = $.76$), and withdrawal (alcohol = $.70$, drugs = $.85$). Cronbach alpha in this study was $.75$ for alcohol at Intake and $.78$ for alcohol at Week 8 Follow Up. Only one question from the marijuana items was used so reliability was not calculated for marijuana in this study.

Delinquent behavior. The measure for the delinquency variable was the Late Adolescence Delinquency Scale (LADS; McCartan, 2007). This scale is composed of 16 items regarding various types of delinquent behaviors in which individuals may have engaged. The Intake measure asked for participants to report their delinquent behavior over the last year and over the last three months; participants completing the Week 8 Follow Up delinquency measure reported their delinquent behavior over the last three months. While the Week 8 Follow Up assessment is completed on the eighth intervention session, and that every session ideally happens weekly, it often takes much longer than eight weeks to reach the Week 8 Follow Up session. On average, it takes 8.5 weeks to reach and complete the Week 4 assessments of Project READY (Arlt, 2016), so one could assume that it would then take approximately 17 weeks to reach and complete the Week 8 assessments. By asking participants to report their delinquent behavior from the past three months at the Week 8 Follow Up assessment, the plan was to capture their delinquent behavior for the duration of the Project READY intervention and not include any delinquent behavior the participant reported at their Intake session.

For each item in the original version of the LADS, respondents were asked to divulge how many times they had participated in that activity, with the following response options: “never,” “once,” “twice,” or “more than twice.” This is on a Likert scale, with points from zero to three given for each response, respectively. The response scores were added to form a cumulative delinquency score, with higher numbers indicating more frequent offending. The scale items included a range of delinquent activity, from less serious actions (lying or truancy) to more serious offenses (physical aggression or theft).

A few alterations were made to this measure to obtain data that are more reflective of the research questions. The Likert scaling was changed for all questions to “How many times have you done the following?” This was presented on a scale from 0 to 10+. I included a three-month behavior count as well, so that the Intake data may be directly matched to the Week 8 Follow Up data. Behaviors in the last year were only assessed at the Intake session. For this study, item 13 (“In the last year, have you ever helped in a gambling operation, like running numbers or books?”) was changed to read, “In the last year, have you ever sold or given drugs to someone?” There are no drug- or alcohol-related questions in the original LADS, and of all the questions, it is least likely that a large portion of the study sample would be involved in running numbers for a gambling operation. To test the second exploratory hypothesis (the proportion of delinquency that is substance-related may be different for those who use neutralization techniques than for those who do not) an additional question was added for each item that asked “What percentage of those times happened while under the influence of drugs or alcohol?” The Cronbach’s alpha value of .86 indicated that the reliability of the original data was strong. The reliability of this version of the scale is .93 for the Intake version and .92 for the Week 8 Follow Up version.

Neutralization techniques. To measure neutralization techniques, a version of Ball's Neutralization Inventory (Ball, 1966, 1973) that was later revised (Mitchell & Dodder, 1983; Shields & Whitehall, 1994) was used. In this measure, the participants are presented with three vignettes that describe a deviant act, and then they are provided statements regarding each situation. An example of a vignette is "While loafing around in a store, David takes some things without paying for them." The participant is then asked how much they agree or disagree with an ensuing statement using a Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). These statements represent each of the five neutralization techniques: denial of responsibility, denial of a victim, denial of injury, condemn the condemner, and appeal to higher loyalties. Example items include "People should not blame David if he was trying to protect himself" (denial of responsibility); "people should not blame David if the other boys had been trying to hit him" (denial of a victim); "people should not blame David if this was the normal thing to do where David lived" (denial of injury); "people should not blame David if the owner cheats poor people out of everything" (condemn the condemners); and "people should not blame David if he had to prove to his friends he could do it" (appeal to higher loyalties). The participants' responses yield a score for each of the five neutralization techniques by averaging their responses on each item endorsing the five techniques. Across 17 studies of neutralization techniques, the average effect size for measuring neutralization techniques has been considered small to medium: $r_{xy} = .21$ (Fritsche, 2005). Studies have typically found positive but weak effects of neutralization technique use on deviance, with correlations between use of neutralization techniques and criminal behavior to be small to medium as well (Morris & Copes, 2012).

A number of changes to this measure were made to ensure it was appropriate for the current study sample. Due to the year in which the original and revised versions of this inventory were published (1966 and 1983, respectively), the wording of the vignettes and statements were updated for the current study (e.g. in the statement, “People should not blame David if everyone knows that the owner is very crooked,” the word ‘crooked’ was changed to ‘dishonest’). The original vignettes used the name ‘Jack’ and was changed to ‘David’ to increase appropriateness and familiarity across cultures. Furthermore, the last vignette (“David stops a man on a dark street when nobody else is around. He pulls a knife and makes the man hand over his money”) will be changed to “David’s friend asks him to sell marijuana for him. David brings it to school and sells it to some classmates.” This is because the sample for the current study is enrolled in a school-based substance use intervention, and not incarcerated or in juvenile detention as was the sample in the previous studies using this measure. Furthermore, as the current research hypotheses involve substance use behaviors in addition to other delinquent acts, it was important to include substance use in this measure of neutralization techniques. Support for altering the wording of original scales comes from Albert Bandura (2006) in his chapter on measuring self-efficacy. He stated that if the wording of an item or series of items on a measure was not satisfactory, be it too ambiguous or yielding unvaried responses, researchers may discard or rewrite those items. The use of techniques of neutralization is another social learning construct that fits within Bandura’s framework, providing support for the alteration of the language of the neutralization technique measure. The Cronbach’s alpha of the revised neutralization technique measure used in this study was .94.

Chapter III

Results

Data Entry

Data were gathered using the online survey tool Qualtrics and downloaded into a file compatible with the most current version of the Statistical Package for the Social Sciences (SPSS; version 24). Participants with missing data were excluded from analyses. According to recommendations given by Field (2009), the assumption of normality was screened for by examining skewness and kurtosis. Outliers were examined, and the few extreme cases of high substance use and high delinquency were considered clinically relevant and were therefore included in this study. To account for these extreme cases (high skewness and kurtosis), alcohol use, marijuana use, and delinquency variables were square root transformed to maintain the ratio of the outcome values but decrease the extremity of the outlier values. Data were then examined on a probability-probability plot after being transformed and were determined to be normally distributed. The assumption of homoscedasticity was assessed for by examining a scatter plot which indicated that the error terms along the regression line were slightly unequal, indicating the presence of heteroscedasticity. Multicollinearity was assessed by examining the Variance Inflation Factor which indicated that multicollinearity was present in the current data as well. Linearity was tested by examining a scatter plot of residual and predicted values; this assumption was not violated in the data. Finally, independence was examined using the Durbin-Watson test and this assumption was also not violated.

Substance use data from the CDDR was analyzed separately as alcohol use (by multiplying quantity of alcohol use per sitting by frequency of alcohol use per month) and

marijuana use (examining frequency of marijuana use per month), both at Intake and at Week 8. The variables of alcohol and marijuana use were continuous.

Delinquency scores were summed to yield a total score (continuous) of delinquency at Intake and at Week 8 Follow Up. Delinquency items were also divided into four categories of delinquent behavior: rule violations (e.g. “Skipped a full day of school without permission”), violent behavior (e.g. “Hit or seriously threatened to hit someone”), stealing (e.g. “Taken something from a store without paying for it”), and serious delinquent behavior (e.g. “Broken into a building or vehicle to steal something or just look around”). The creators of this measure only examined the total score of delinquency so there is no precedent set for this categorization scheme. However, the intent was to capture the clinical relevance of different types of delinquency on outcomes in this study, so the delinquency categories were examined in an exploratory hypothesis.

Neutralization techniques were examined both continuously and categorically. For examination of neutralization as a continuous variable, the participants’ response on each item was summed to create a total neutralization score. For categorical examination of neutralization, data were coded as follows: if the respondent selected 1, 2, or 3 (strongly disagree, disagree, or unsure) for an item, that was coded as 0 for no use of a neutralization technique on that item; if they selected 4, or 5 (agree or strongly agree), that was coded as 1 for use of that neutralization technique on that item. The new value for each item (either 0 or 1) was summed for each section relating to a specific technique of neutralization, yielding five total scores, one for each technique. If the respondent endorsed more than one item in each neutralization technique category (e.g. agree with two or more of the four questions regarding denial of injury) the participant’s responses were considered an endorsement of using that technique of neutralization.

While the previous neutralization technique literature has either measured this construct continuously or not specifically described their coding scheme, I have chosen to also code this variable by using cutoff points on each item to measure which techniques are being endorsed and used more frequently.

Statistical Analyses

Preliminary analyses. The first set of analyses that were run were bivariate correlations between alcohol use, marijuana use, delinquency, and neutralization technique use, all at Intake and Week 8 Follow Up. While their strength varied, these relationships were all positive in nature (see Table 4). Descriptive variables of age and grade in school were not correlated with initial substance use and were not included in any subsequent analyses. Means and standard deviations for all included variables were also examined (see Table 5). Statistical analyses for the main hypotheses were conducted with hierarchical linear regression.

Table 4

Variable Correlations

| | Wk 8 Alc QxF sqrt | Intake MJ Freq sqrt | Wk 8 MJ Freq sqrt | Intake DEL sqrt | Wk 8 DEL sqrt | Intake total NT | Wk 8 total NT |
|------------------------|----------------------|------------------------|----------------------|--------------------|------------------|--------------------|------------------|
| Intake Alc QxF sqrt | .395** | .327** | .232 | .206 | .161 | .149 | .217 |
| Wk 8 Alc QxF sqrt | | .149 | .332* | .226 | .191 | .355* | .386* |
| Intake MJ Freq sqrt | | | .422** | .348*** | .407** | .205 | .176 |
| Wk 8 MJ Freq sqrt | | | | .343* | .220 | .368* | .435** |
| Intake DEL sqrt | | | | | .677*** | .569*** | .355* |
| Wk 8 DEL sqrt | | | | | | .410** | .369** |
| Intake total NT | | | | | | | .759*** |

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

Table 5

Variable Means and Standard Deviations

| Variable | Description | <i>M (SD)</i> |
|--------------|--|---------------|
| AlcQxF_I | Alcohol quantity (drinks per day) by frequency (drinking days per month), measured at Intake | 27.83 (60.41) |
| AlcQxF_8 | Alcohol quantity (drinks per day) by frequency (drinking days per month), measured at Week 8 | 7.59 (12.76) |
| MjFreq_I | Marijuana frequency (days per month), measured at Intake | 15.55 (10.65) |
| MjFreq_8 | Marijuana frequency (days per month), measured at Week 8 | 9.04 (9.45) |
| Del_yr_TOT | Sum of number of delinquent behaviors over the last year, measured at Intake | 32.30 (36.73) |
| Del_3mo_TOT | Sum of number of delinquent behaviors over the last three months, measured at Intake | 19.80 (27.12) |
| Del8_3mo_TOT | Sum of number of delinquent behaviors over the last three months, measured at Week 8 | 9.25 (10.18) |
| NT_TOT | Total neutralization (continuous), measured at Intake | 44.44 (15.20) |
| NT8_TOT | Total neutralization (continuous), measured at Week 8 | 40.75 (13.79) |

Descriptives of delinquency and neutralization. Endorsement of the categories of neutralization techniques was examined. Of the 84 participants who completed Intake assessments, 37 participants (44%) endorsed using zero neutralization techniques, 21 (25%) reported using one, 10 (12%) reported using two, 10 (12%) reported using three, five (6%) reported using four, and one (1%) participant reported using all five neutralization techniques. Specifically, 43 (51%) endorsed using denial of the victim, 27 (32%) endorsed using condemnation of the condemners, 12 (14%) endorsed using denial of injury, eight (10%) endorsed using denial of responsibility, and six (7%) endorsed using appealing to higher loyalties at Intake.

At the Week 8 Follow Up, of the 48 participants who completed the intervention, 26 (31%) reported using zero neutralization techniques, 11 (23%) reported using one, eight (17%) reported using two, and three (6%) participants endorsed using three neutralization techniques. No student endorsed using four or five neutralization techniques. Furthermore, 21 (44%) endorsed using denial of the victim, 11 (23%) endorsed using condemnation of the condemners, two (4%) endorsed using denial of injury, one (2%) endorsed using appealing to higher loyalties, and one (2%) endorsed using denial of responsibility at Week 8 Follow Up. Certain neutralization techniques showed higher rates of decrease over time than others, with denial of the victim reducing by 50% and condemnation of the condemners reducing by 40%, whereas denial of injury and appeal to higher loyalties both decreased by 14% and denial of responsibility decreased by 10% over time.

The various classes of delinquent behavior were also examined (see Table 6). In addition to the aforementioned significant decrease of reported delinquent behavior from Intake (3 mo.) to Week 8 follow up, a significant decrease from Intake (average over the past year) to Intake (average over the past three months) was observed, $F(1,40)=24.539$, $p<.001$, partial $\eta^2=.380$. The interaction with total neutralization at Intake was similarly not significant, $F(43,40)=1.340$, $p=.176$, partial $\eta^2=.590$.

Table 6

Number of Participants Endorsing Each Type of Delinquent Behavior

| | Intake Delinquency (year) $N = 84$ | Intake Delinquency (past 3 mo.) $N = 84$ | Week 8 Follow Up (past 3 mo.) $N = 48$ |
|-----------------|---------------------------------------|---|---|
| Rule Breaking | 80 (95%) | 77 (92%) | 35 (73%) |
| Serious (crime) | 57 (68%) | 46 (55%) | 20 (42%) |
| Stealing | 57 (68%) | 42 (50%) | 18 (38%) |
| Violence | 41 (49%) | 29 (35%) | 10 (21%) |

Main Analyses

Alcohol use hierarchical linear regression. A five-step hierarchical linear regression was conducted using alcohol use at Week 8 Follow Up as the dependent variable. Alcohol use at Intake was entered in step one, total neutralization at Intake was added in step two, total delinquency at Intake was entered in step three, an alcohol use at Intake by neutralization at Intake interaction term was added in step four, and a delinquency at Intake by neutralization at Intake interaction was added in step five. See Table 7 for regression statistics.

The hierarchical linear regression analysis revealed that, at step one, alcohol use at Intake contributed significantly to the regression model and accounted for 15.6% of the variance of alcohol use at Week 8 Follow Up. When neutralization technique use was added, it significantly contributed to the model and accounted for 23.8% of the variance in the dependent variable. Adding the delinquency at Intake variable did not significantly contribute to the model and neither did adding either interaction term.

Marijuana use hierarchical linear regression. A five-step hierarchical linear regression was conducted using marijuana use at Week 8 Follow Up as the dependent variable. Marijuana use at Intake was entered in step one, total neutralization at Intake was added in step two, total delinquency at Intake was entered in step three, a marijuana use at Intake by neutralization at Intake interaction term was added in step four, and a delinquency at Intake by neutralization at Intake interaction was added in step five. See Table 8 for regression statistics.

The hierarchical linear regression analysis revealed that, at step one, marijuana use at Intake contributed significantly to the regression model and accounted for 17.8% of the variance of alcohol use at Week 8 Follow Up. When neutralization technique use was added, it significantly contributed to the model and accounted for 25.8% of the variance in the dependent

variable. Adding the delinquency at Intake variable did not significantly contribute to the model and neither did adding either interaction term.

Table 7

Hierarchical Linear Regression for Variables Predicting Alcohol Use at Week 8 Follow Up

| Variable | <i>B</i> | <i>t</i> | <i>sr</i> | <i>R</i> | <i>R</i> ² | Adj. <i>R</i> ² | <i>R</i> ² Δ | <i>F</i> Δ | Sig. <i>F</i> Δ |
|----------|----------|----------|-----------|----------|-----------------------|----------------------------|-------------------------|------------|-----------------|
| Step 1 | | | | .395 | .156 | .138 | .156 | 8.503 | .005 |
| SqtAqf_I | .198 | 2.916** | .395 | | | | | | |
| Step 2 | | | | .488 | .238 | .204 | .082 | 4.835 | .033 |
| SqtAqf_I | .171 | 2.567* | .334 | | | | | | |
| NT_TOT | .046 | 2.199* | .286 | | | | | | |
| Step 3 | | | | .489 | .240 | .188 | .002 | .095 | .760 |
| SqtAqf_I | .168 | 2.486* | .327 | | | | | | |
| NT_TOT | .043 | 1.857 | .244 | | | | | | |
| SqtDEL3m | .051 | .308 | .040 | | | | | | |
| Step 4 | | | | .508 | .258 | .189 | .018 | 1.070 | .307 |
| SqtAqf_I | -.095 | -.361 | -.047 | | | | | | |
| NT_TOT | .023 | .775 | .102 | | | | | | |
| SqtDEL3m | .036 | .214 | .028 | | | | | | |
| ALCxNT | .006 | 1.034 | .136 | | | | | | |
| Step 5 | | | | .518 | .268 | .181 | .010 | .590 | .447 |
| SqtAqf_I | -.069 | -.260 | -.034 | | | | | | |
| NT_TOT | -.008 | -.154 | -.020 | | | | | | |
| SqtDEL3m | -.526 | -.701 | -.093 | | | | | | |
| ALCxNT | .005 | .901 | .119 | | | | | | |
| DELxNT | .012 | .768 | .101 | | | | | | |

Note: *N* = 47, **p* < .05, ***p* < .01

Table 8

Hierarchical Linear Regression for Variables Predicting Marijuana Use at Week 8 Follow Up

| Variables | <i>B</i> | <i>t</i> | <i>sr</i> | <i>R</i> | <i>R</i> ² | Adj. <i>R</i> ² | <i>R</i> ² Δ | <i>F</i> Δ | Sig. <i>F</i> Δ |
|-----------|----------|----------|-----------|----------|-----------------------|----------------------------|-------------------------|------------|-----------------|
| Step 1 | | | | .422 | .178 | .160 | .178 | 9.542 | .003 |
| SqtMJF_I | .469 | 3.089** | .422 | | | | | | |
| Step 2 | | | | .508 | .258 | .223 | .080 | 4.611 | .037 |
| SqtMJF_I | .398 | 2.664* | .350 | | | | | | |
| NT_TOT | .042 | 2.147* | .282 | | | | | | |
| Step 3 | | | | .510 | .260 | .207 | .002 | .116 | .735 |
| SqtMJF_I | .372 | 2.200* | .292 | | | | | | |
| NT_TOT | .039 | 1.802 | .239 | | | | | | |
| SqtDEL3m | .057 | .341 | .045 | | | | | | |
| Step 4 | | | | .554 | .306 | .239 | .047 | 2.750 | .105 |
| SqtMJF_I | -.352 | -.754 | -.098 | | | | | | |
| NT_TOT | -.022 | -.526 | -.068 | | | | | | |
| SqtDEL3m | .020 | .121 | .016 | | | | | | |
| MJxNT | .018 | 1.658 | .216 | | | | | | |
| Step 5 | | | | .575 | .331 | .248 | .025 | 1.484 | .230 |
| SqtMJF_I | -.854 | -1.375 | -.178 | | | | | | |
| NT_TOT | -.002 | -.039 | -.005 | | | | | | |
| SqtDEL3m | 1.058 | 1.220 | .158 | | | | | | |
| MJxNT | .029 | 2.058* | .266 | | | | | | |
| DELxNT | -.021 | -1.218 | -.158 | | | | | | |

Note: *N* = 47, **p* < .05, ***p* < .01

Exploratory Hypotheses

Delinquent behavior while under the influence of substances. This exploratory hypothesis stated that participants who engaged in delinquent behavior while under the influence of substances would report lower neutralization technique use than those who did not use substances while participating in delinquent behavior. At Intake, 69 of the 84 participants (82%) used substances while participating in their delinquent behavior over the past year and 65 of the 84 participants (77%) had used substances while participating in delinquent behavior over the past three months. At Week 8 Follow Up, 20 of the 48 students (42%) used substances while engaging in delinquent behavior, demonstrating the effectiveness of the Project READY intervention in substance use reduction over time.

An independent-samples t-test revealed a significant difference in neutralization technique use between those who reported using substances while engaging in delinquent behavior as compared to those who reported engaging in delinquent behaviors while sober, with those reporting no substance use reporting less use of neutralization techniques, $t(82) = -4.339$, $p < .001$. In contrast, at Week 8 Follow Up, no significant differences in neutralization technique use was observed between those who reported using versus not using substances while engaging in delinquent behavior, $t(82) = -1.186$, $p = .239$.

Reduction of neutralization over time. A second exploratory hypothesis was that, if participants' delinquency and substance use reduced over time, then their use of neutralization techniques would also reduce over time. Repeated-measures Analysis of Variance analyses were used to determine that each variable significantly decreased over time: alcohol use ($F[1,17] = 25.796$, $p < .001$); marijuana use ($F[1,16] = 10.032$, $p = .006$); delinquency ($F[1,17] = 6.438$, $p = .021$); and neutralization technique use ($F[1,47] = 4.848$, $p = .033$).

Chapter IV

Discussion

This study tested the effectiveness of an MI-based substance use intervention in decreasing alcohol use, marijuana use, and delinquent behavior over time. These variables were reviewed in the context of their relationship with the use of neutralization techniques. Ten hypotheses were tested in this study: (1) Alcohol use at Time 1 will positively predict alcohol use at Time 2, (2) neutralization technique use at Time 1 will positively predict alcohol use at Time 2, (3) delinquent behavior at Time 1 will positively predict alcohol use at Time 2, (4) the combined effect of neutralization and alcohol use at Time 1 will positively predict alcohol use at Time 2, (5) the combined effect of neutralization and delinquent behavior at Time 1 will positively predict alcohol use at Time 2, (6) marijuana use at Time 1 will positively predict marijuana use at Time 2, (7) neutralization technique use at Time 1 will positively predict marijuana use at Time 2, (8) delinquent behavior at Time 1 will positively predict marijuana use at Time 2, (9) the combined effect of neutralization and marijuana use at Time 1 will positively predict marijuana use at Time 2, and (10) the combined effect of neutralization and delinquent behavior at Time 1 will positively predict marijuana use at Time 2. Hypotheses 1, 2, 6, and 7, regarding Intake substance use and neutralization technique use predicting substance use outcomes, were supported. The other hypotheses about delinquency and the combined predictors on substance use outcomes were not supported.

Interpretation of Results

While intake substance use and use of neutralization techniques at intake predicted substance use outcomes, delinquency at intake did not predict substance use outcomes. The data show that substance use outcomes are not predicted by the number of delinquent behaviors in

which the participants engage, but rather by how the participants think about their behavior. The cognitive strategy of neutralization has a more powerful effect on maintaining behavior than the behavior itself. Using Problem Behavior Theory (Jessor & Jessor, 1977), it is possible that the various neutralization techniques fall under the Personality System and Perceived Environmental System to impact the Behavior System and enable substance use and other delinquent behavior. For example, the neutralization technique of appeal to higher loyalties could be related to friends approval problem behavior under the proximal structure within the Perceived Environmental System. Use of neutralization techniques appear to contribute to the social-psychological variables of Problem Behavior Theory that impact substance use and other problematic behavior.

Furthermore, these results demonstrate that neutralization technique use predicts substance use outcomes over and above substance use at intake. Clinically, if a patient presents with comorbid substance use and delinquent behavior, this information can be useful in treatment planning. A therapist will likely see improved outcomes by focusing on the cognitions that maintain the unwanted behavior as opposed to working on the behaviors themselves, and before engaging in a substance use intervention.

Alcohol use, marijuana use, delinquent behavior, and neutralization technique use all decreased significantly over time. In the original neutralization technique literature by Sykes and Matza, neutralization was described as a trait-based characteristic. However, it was seen to reduce over the course of this intervention, so it was perhaps more of a situational characteristic in this population. Use of neutralization techniques may have become less necessary as the participants' delinquent behavior, including alcohol and marijuana use, decreased as well. If the students engaged in fewer behaviors not condoned by mainstream society, they would need fewer justifications for their behavior. It is likely because of this that the participants who

endorsed engaging in delinquent behavior while under the influence of substances endorsed using significantly more neutralization techniques at Intake than those who engaged in delinquent behavior while sober. Furthermore, this likely contributes to understanding the finding that no significant difference in neutralization technique use was found between substance users and non-substance users at Week 8 Follow Up when reporting delinquent behavior.

Finally, analysis of attrition rates revealed that participants who completed versus did not complete the intervention did not significantly differ on their self-report of alcohol or marijuana use at intake, but treatment non-completers reported significantly more delinquent behavior in the last 3 months at intake than those who did complete the intervention. While the intake delinquency variable did not predict the participants' substance use outcomes, it did demonstrate predictive value in determining who is more likely to not complete the intervention. Reasons for participant attrition were not recorded in this study but this would be valuable information to have in future studies to help decrease attrition and to give the participants the best chance of completing Project READY to decrease their substance use.

Limitations

Recruitment has been an ongoing challenge with Project READY over the last few years. Schools that have provided consistent student referrals in the past have slowed or stopped altogether for various reasons. For example, with the frequent change in counselors and administrators at each school comes changes in the process for READY interventionists seeing students. Interventionists are persistent in contacting the personnel at each school to address their respective challenges and to provide education about Project READY but various administrative difficulties have made the recruitment and referral process difficult recently.

An additional challenge is retaining the participants in the study until the end of the intervention. Because this is a school-based intervention, many school activities prevent students from being seen weekly (e.g. field trips, taking tests, skipping class, giving a presentation, etc.). According to Arlt (2016), previous Project READY retention rates were as high as 62%; over the course of the two years of this data collection, of the 84 participants who completed all Intake measures, only 48 completed Week 8 assessments, resulting in 57% retention. As this is an outcome study, it was imperative that students complete the Week 8 Follow Up assessments to be included in data analysis. It was predicted that the proposed N for this study (62-81) would be reached in one full year of Project READY but it ended up taking two years to reach an acceptable N for intakes and 14 additional Week 8 assessments would have been necessary to reach the lowest proposed N; this likely would have required one additional year of data collection.

For those students who did complete the entire intervention, their data is still inherently questionable. Project READY relies on the adolescent participants to recall their alcohol and drug use and delinquent behavior over the course of many weeks. Not only is self-report notoriously inaccurate but it is also challenging for participants under the influence of substances to accurately recall the exact number of drinks they consumed in one night three weeks ago, for example. While interventionists work diligently with their participant to assist in this type of memory recall, using calendars and other memory strategies, the accuracy of substance use self-report in adolescents should be questioned.

Measure imprecision may also have been evident with the LADS because it was originally created for adolescents in an inpatient or incarcerated setting, whereas the study population were seen in a school-based setting and had overwhelmingly not experienced legal

repercussions for any delinquent behavior in which they had engaged. It is possible that the questions asked of these participants did not accurately capture the delinquent behavior that was prevalent for their population.

Furthermore, during the first year of data collection, the Intake delinquency measure was written incorrectly in the first set of surveys that were given to interventionists. The measure mistakenly asked for the percentage of time the participant completed delinquent behavior “while not using substances,” instead of stating “while using substances,” as intended. While this correction was given to interventionists multiple times verbally until corrected surveys could be created, some interventionists still stated their confusion as to what number they should record.

Finally, an exploratory hypothesis related to decisional balance and change scores over time was proposed originally but was subsequently abandoned. Due to a miscommunication with the undergraduates at a different university collecting Project READY data at other local area high schools, the interventionists did not collect decisional balance data. Because the number of students with decisional balance data was too limited for analysis, this exploratory hypothesis was eliminated.

Future Studies

In most adolescent research, substance use and other delinquent behavior are most often studied in an inpatient or forensic setting. Given the unique population of this intervention in a school-based setting, future studies are needed to replicate results in an outpatient setting with treatment participation being voluntary. Delinquent behavior and substance use are likely to be different for those teenagers who have not yet experienced severe consequences (e.g. mandated to substance use treatment, sentenced to juvenile detention, etc.) so these results are likely only generalizable to the type of population studied here.

For Project READY, understanding the participants' level of neutralization technique use will be valuable in determining the most effective type of substance use treatment for each student. A future study should examine the effectiveness of using an intervention such as contingency management for those with higher neutralization technique use, and note if that produces comparable substance use outcomes to using MI with those who are lower in neutralization technique use. Additionally, cognitive restructuring may also assist in decreasing neutralization technique use prior to engaging in a substance use treatment.

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