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Measuring Knowledge and Attitudes of Clinicians About Motivational Interviewing with Troubled Adolescents

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Walden University
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Abstract

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MS, Walden University, 2008

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Proposal Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Adolescents with acting-out behavior have an increased risk of dropping out of high school, incarceration, and early mortality. Researchers have indicated the need for studies using motivational interviewing (MI) to promote behavioral change. There is a gap in the literature about the efficacy of MI with adolescents and clinicians' knowledge of, and attitude toward, MI. Using self-determination theory as the grounding theory, this study examined the knowledge and attitudes of 73 clinicians on the island of St. Croix, Virgin Islands, about knowledge and attitudes of MI and whether it predicted the use of MI as a therapeutic intervention for adolescents who exhibit acting-out behavior. A cross-sectional survey was used to collect data using an adapted version of Leffingwell's Motivational Interviewing Knowledge and Attitudes Test (MIKAT). Two phases were required: a pilot study and a full study. A pilot study of 10 clinicians was used to establish the reliability of the revised MIKAT. In total a purposive sample of 73 clinicians participated in the full study, which includes the 10 from the pilot study. Results of the multiple linear regression test indicated that knowledge about MI and attitudes towards MI were not significant predictors of likelihood to use MI ($p = .875$). The results of this study may contribute to positive social change by supporting the development of effective training for clinicians who work with adolescents on St. Croix, where adolescent behavior is of great concern.

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Dedication

I dedicate this dissertation to, first of all, God, for providing me with strength and wisdom. To my husband, Eddie, for your unwavering support, my children, Sonja, Peter Jr, Shidoya, Shideya, and Nancy, for sacrificing mommy time and redefining quality time with me. My parents, Hilary and Alicia Joseph, my parents in law, Angel and Raquel Parrilla, and my siblings, especially Cheryl and Hugh, who continue to inspire me to bring my A-game. My grandmother and primary teacher, Jane Vera Charles Alphonse and the rest of my family and friends on the islands of St. Lucia, St. Croix, US mainland, and beyond.

Additionally, I dedicate this dissertation to the initiator of my PhD journey, my incredible mentor, G. Rita Dudley-Grant, PhD, who first inspired me to become a clinical psychologist and continues to teach me the importance of providing culturally competent services in the US Virgin Islands and the Caribbean.

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Chapter 1: Overview

Introduction

The purpose of this quantitative study was to examine whether the knowledge and attitudes of clinicians about MI predicted the likelihood of using the MI approach as an intervention in their clinical practice. The 73 participants in this study provided therapeutic services to adolescents who exhibited acting-out behavior (externalizing behavior, such as verbal and physical aggression, delinquency) on the island of St. Croix in the U.S. Virgin Islands. The results of this study may contribute to the development of effective training for clinicians working with adolescents on St. Croix, where adolescent behavior is of great concern. These challenges stem from a high child poverty rate on St. Croix (35%), which impacts educational performance, level of sexual activity and juvenile delinquency (Blackburn, 2013). Miller and Rollnick (2002) suggested that MI—an intricate style of counseling—requires counselors to be carefully trained in reflection and working through ambivalence, while at the same time remaining collaborative and client-centered. MI is a challenging therapy model. Thus, clinicians' knowledge and attitude about it are important aspects to study in order to develop more effective MI training practices.

Chapter 1 provides an overview of the study and includes the following sections: background, problem statement, purpose, research questions and hypothesis, theoretical framework, nature of the study, definitions, assumptions, scope and delimitations, limitations, significance, and summary.

Background

MI is an evidence-based intervention, built on a series of techniques (D'Amico et al., 2012; Jensen et al., 2011) that are used in working with a variety of populations with an array of presenting problems. MI engenders a collaborative relationship between the client and therapist (Miller & Rollnick, 2002). The manner in which MI is conducted with a client is affected by the skill level and style of the therapist (Carpenter et al., 2012; L. Forsberg, L. G. Forsberg, Lindqvist, & Helgason, 2010; Miller & Rose, 2009). Various studies of MI training have measured the effectiveness of MI, including parole officers (Alexander, VanBenschoten, & Walters, 2008; Kleinpeter, Koob, & Chambers, 2011), juvenile and correctional staff in California (Doran, Hohman, & Koutsenok, 2011), and medical students (Poirier et al., 2004). Additionally, researchers have measured the effect of clinicians' characteristics (such as age, sex, cultural background, and counseling style of clinicians) on MI training (Carpenter et al., 2012) and the time required for continuing the development of MI skills (Mitcheson, Bhavsar, & McCambridge, 2009).

As MI continues to evolve for use with adolescent populations, scientists maintain the need for further research (Moyers, 2011). Using MI with adolescents in therapy has mainly been studied in the context of substance use (D'Amico et al., 2012; Jensen et al., 2011; Moyers, 2011; Naar-King, 2011). Jensen et al. (2011) conducted a meta-analysis on the use of MI with adolescents with substance abuse issues and found small but significant effect sizes. The paucity of research suggests more studies are needed to determine the efficacy of MI with adolescents' health changes. Additionally, researchers

have recommended studies in other areas of behavioral change with adolescents (such as aggression, parent relational problems, and healthy sexual behaviors) to determine the effectiveness of MI in that age group (American Psychological Association Presidential Task Force on Evidence-Based Practice, 2006; Jensen et al., 2011; Naar-King, 2011). However, there has been no research on the value of using MI with adolescents who exhibit acting-out behavior, such as aggressive and hypersexualized behaviors, and no intervention was developed specifically to assess the knowledge and attitudes of clinicians toward their use of MI with adolescents. Related, and included in in the literature review, is a need to identify clinicians' current knowledge of and attitudes toward MI by those who treat adolescents.

Problem Statement

Adolescents who exhibit acting-out behaviors—such as physical, verbal, and sexual aggression—are at high risk for violence and committing crimes during adulthood (Liu, 2006). Delinquent teens tend to perform poorly in school, and are at high risk of dropping out, have more behavioral problems, and are arrested more often than their peers. These teens have lower employment rates and face higher incidence of death compared to adolescents who do not act out (Bridgeland, DiIulio, & Morison, 2006; Egley & Ritz, 2006; Gemignani, 1994; OJJDP Statistical Briefing Book, 2014, Stahl, 2008).

Adolescent behavior on St. Croix is a challenge that stems from a high child-poverty rate (35%) and impacts educational performance (62% of 11th graders score

below proficiency in reading), sexual activity (1 of 5 public school children report sexual activity before age of 13), and juvenile delinquency. Juvenile delinquency decreased by 50% (Blackburn, 2013). The decrease in juvenile delinquency was likely influenced by several factors, including a decrease in the population of St. Croix and a decrease in reports of juvenile delinquency (Blackburn, 2013). Research has indicated the potential for MI to promote behavioral change among adolescents with acting-out behavior (Jensen et al, 2011; Moyers, 2011; Naar-King, 2011). However, limited research has been completed in this area. More research is needed to determine effective interventions for adolescents with acting out behavior. There is a gap in the literature on the efficacy of MI with adolescents (Feldstein & Ginsburg, 2007; Higa-McMillan, Powell, Daleiden, & Mueller, 2011; Naar-King, 2011; T. D. Nelson & J. M. Nelson, 2010). The manner in which MI is conducted is affected by the skill level and style of the clinician (Carpenter et al., 2012; Forsberg et al., 2010; Miller & Rose, 2009). Therefore, it is important to measure clinicians' knowledge of and attitudes toward using MI in order to develop effective trainings for clinicians working with adolescents with acting-out behavior. The goal of this study was to help develop more effective trainings in MI specific to those clinicians who work with adolescents.

Purpose of the Study

The goal of this quantitative study was to develop more effective trainings in MI for clinicians who work with adolescents. This research will contribute to the literature that identifies which variables increase clinician fidelity to the practice of MI with

adolescents with acting-out behavior. Currently, there is a lack of research on the effectiveness of trainings for clinicians using MI to help adolescents change their behavior. The study was designed to examine the current knowledge and attitudes of clinicians about MI to predict clinicians' likelihood of using MI when treating teens with acting-out behavior. This study used a cross-sectional survey to collect data through a researcher-adapted version of the Motivational Interviewing Knowledge and Attitudes Test (MIKAT). The MIKAT uses true/false and multiple-choice formats to measure the variables of clinician knowledge about and attitudes toward MI. The independent variables in this study were (a) level of knowledge about MI and (b) attitudes toward MI. The dependent variable was the likelihood of clinicians to use MI with adolescents who exhibit acting-out behavior.

Research Questions and Hypothesis

This study used three research questions:

1. To what extent does clinicians' knowledge of MI, as measured by the MIKAT, predict the likelihood of their use of the MI approach?

The likelihood of using the MI approach is the dependent variable scored on a scale of 1 *(not at all likely)* to 5 *(extremely likely).* The clinicians' knowledge of MI is the independent variable, scored using a dichotomous true or false scale where 0 is coded as the incorrect answer and 1 is coded as the correct answer. The true or false scale determines the extent of attitudes of clinicians about MI based on their responses about

beliefs of MI. All correct answers were summed to produce a total score of attitudes toward MI for each respondent.

H_{o1}: Clinicians' knowledge of MI, as measured by MIKAT knowledge scores, does not predict the likelihood of using the MI approach, as measured by MIKAT likelihood to use MI scores, among clinicians who work with adolescents who exhibit acting-out behaviors.

H_{a1}: Clinicians' knowledge of MI, as measured by MIKAT knowledge scores, does predict the likelihood of using the MI approach, as measured by MIKAT likelihood to use MI scores, among clinicians who work with adolescents who exhibit acting-out behaviors.

2. To what extent does clinicians' attitude toward MI as measured by the MIKAT predict the likelihood of use of the MI approach?

The likelihood of using the MI approach is the dependent variable, which is scored on a scale of 1 *(not at all likely)* to 5 *(extremely likely).* Attitude toward MI is the independent variable, scored using a dichotomous true or false-scale, where 0 is coded as the incorrect answer and 1 is coded as the correct answer. The true or false-scale determines the extent to which a clinician knows about MI by responding true or false to each item presented in that section. All correct answers were summed to produce a total score for each respondent.

H_{o2}: Clinicians' attitude toward MI as measured by MIKAT attitude scores do not predict the likelihood of using the MI approach among clinicians who work with adolescents who exhibit acting-out behaviors.

H_{a2}: Clinicians' attitude toward MI as measured by MIKAT attitude scores do predict the likelihood of using the MI approach among clinicians who work with adolescents who exhibit acting-out behaviors.

A purposive sampling of clinicians working with adolescents with acting-out behavior on St. Croix completed the survey. Data were analyzed using the student version of the (SPSS),v23. The study was conducted based on the mandates of the Walden University's Institutional Review Board (IRB) to ensure that all participants of the study are ethically protected.

3. What is the combined impact of clinician knowledge of and attitudes about MI on clinicians' intention to use MI?

To examine this question, the R squared and F value of the model were be examined. If the F value was significant, then the model R squared value explained the combined impact of clinicians' knowledge of/attitudes about MI on clinicians' intention to use MI.

H_{o3}: Clinicians' knowledge of and attitude toward MI as measured by MIKAT attitude and knowledge scores do not impact clinician intention to use MI.

H_{a3}: Clinicians' knowledge of and attitude toward MI as measured by MIKAT attitude and knowledge scores do impact clinician intention to use MI.

Theoretical Foundation

Several theories and models are associated with MI: the theory of positive psychology (Wagner & Ingersoll, 2008), transtheoretical stages of change model (TTM; Norcross, Krebs, & Prochaska, 2011), client-centered theory (Lundahl & Burke, 2009; Miller, 1999), and self-determination theory (SDT; Miller & Rollnick, 2012). Lundahl and Burke (2009) explained that MI is based on several theories about the motivation that drives behavioral change. Although other theories could be seen as related to MI, for the purpose of this study, MI was seen as based on the theory of positive psychology, TTM, client-centered theory, and SDT. All four theories and have been well researched, and focus on practitioners working with teens (Lundahl & Burke, 2009; Markland et al., 2005; Miller, 1999; Miller & Rollnick, 2012; Norcross, Krebs, & Prochaska, 2011; Wagner & Ingersoll, 2008). The grounding theory was SDT because it focuses on the key aspects of MI related to the research questions: autonomy, competence, and relating to others (Markland et al., 2005; Miller & Rollnick, 2012). Detailed information about the grounding theory and related theories are provided in Chapter 2.

SDT is a good fit for this study because, similar to MI, it focuses on the competence, collaboration, and self-sufficiency of the clinician in providing services to clients. Research that used SDT as the supporting/underlying theory and MI as the interventional approach has been done primarily in the area of promoting health changes with clients (Hardcastle, Blake, & Hagger, 2012; Reniscow et al., 2008). Researchers have suggested the need for continued empirical studies to determine and then test the

similarities, differences, and effectiveness of these two approaches when combined (Deci & Ryan, 2012; Hardcastle et al., 2012; Markland et al., 2005; Miller & Rollnick, 2012; Reniscow et al., 2008). Based on research about SDT and MI, linking SDT with MI has contributed to effective outcomes and suggests that it would be effective as the grounding theory on this study of the practice of MI.

Although there are core differences between MI and SDT, the developers of both MI (Miller & Rollnick, 2012) and SDT (Deci & Ryan, 2012) continue to maintain the need for further studies using MI as the intervention and SDT as the theory. Several researchers have found that MI and SDT complement each other (Deci & Ryan, 2012; Hardcastle et al., 2012; Markland et al., 2005; Miller & Rollnick, 2012; Reniscow et al., 2008). They substantiate the usefulness of SDT as the theoretical framework in this dissertation. Chapter 2 provides more detailed information on the theoretical framework of this study.

Nature of the Study

The goal of this quantitative research study was to measure whether clinicians' knowledge of, and attitudes toward, MI predicted that they would be likely to use MI. This study used a cross-sectional survey design to collect data using a researcher-adapted version of the Motivational Interviewing Knowledge and Attitudes Test (MIKAT), originally developed by Dr. Thad Leffingwell (2006). Leffingwell (2006) noted that a survey design is most appropriate for collecting information on the knowledge and

attitudes of clinicians. Surveys are cost-effective and cost-efficient methods of obtaining information about attitudes and knowledge in a short period of time (Leffingwell, 2006).

The target population was a purposive sample of clinicians who work with adolescents with acting-out behavior. A purposive sample was practical because the study is focused on the small population of clinicians who reside on St. Croix.

The instrument used in this study, the MIKAT, was an adapted version of a measure that has not been used in other studies. The original MIKAT focuses on clients with substance abuse problems. In a pilot study of a pre- and posttest design involving 71 child and family home-based care providers, the MIKAT was found to have high validity ($p < .01$). In addition, an effect size of 1.37, $t(70) = 5.72$ was reported for MI consistent beliefs (MI attitude) and identification of MI prescribed behaviors (MI knowledge). An effect size of 1.07, $t(70) = -4.49$ was reported for MI inconsistent beliefs and misidentification of MI prescribed behaviors (Leffingwell, 2006). As adaptations to the test were needed, a pilot study of 10 participants was required to test for validity measures prior to carrying out the full study. Reliability was tested using Cronbach's alpha. A Kuder-Richardson 20 reliability analysis was conducted, since the variables of MIKAT knowledge and MIKAT attitude are dichotomous (Traub, 1994). See Chapter 3 for more detail.

When conducting studies using regression, the best practice is to use an effect size that is neither too large nor too small to decrease probability of Type 1 (rejecting the hypothesis that may be true) and Type 2 error (not rejecting the hypothesis that may be

false) and also to increase the statistical significance of the study (Leffingwell, 2006; Maxwell, 2000; Miller & Mount, 2001). The software, G*Power (Erdfelder, Faul, & Buchner, 1996), was used to arrive at the minimum sample size for a multiple regression analysis. Based on the assumption that the multiple regression would have one independent variable, a .15 effect size (medium effect), an alpha level of .05, and a power of .80 (80% chance of detecting a significant effect if one actually exists in the real world), the minimum sample size for this analysis was 68. Therefore, a minimum of 68 participants was recruited for the full research study. The questionnaire allowed the same questions to be asked in a uniform manner of all the participants. Since the study took place with clinicians who work on St. Croix, it was important to collect some demographic data to provide an overview of the participants within the study.

Definitions

The following definitions were used throughout this dissertation:

Knowledge of MI means correctly identifying the MI approach (Leffingwell, 2006).

Attitudes toward MI are beliefs consistent with MI. (Leffingwell, 2006).

Acting-Out behavior is also referred to as externalizing behavior, such as verbal and physical aggression, delinquency, hyperactivity, impulsivity, coercion, non-compliant, running-away behavior, and hypersexualized acting-out behavior (Blos, 1963; Liu, 2006)

Hypersexualized acting-out behavior refers to excessive sexual behavior, or partaking repeatedly in sexual behavior with a disregard for risk of harm to self or others (Kafka, 2010).

Spirit of MI, an interpersonal style used in implementing MI that includes collaboration, evocation, and autonomy (Miller & Rollnick, 1995, 2002, 2009).

Resistance of clients may involve withdrawal, defensiveness, denial, and confrontation. The idea behind resistance is that it is an unconscious defense against feeling vulnerable. Resistance is a component that should be assessed based on the characteristics of both clients and clinicians (Harris et al., 2006).

Change talk is the language that clients use to describe the benefits of change, dissatisfaction with their present behavior, and hopefulness to change (Miller & Rollnick, 2002).

Assumptions

I made 3 assumptions in this study design to enhance accuracy and relevancy. (a) I assumed that the participants would interpret the questions on the adapted MIKAT appropriately and respond to the questions honestly. (b) I assumed all individuals who complete the study are clinicians who work with adolescents with acting-out behavior. (c) I also assumed that the clinicians who complete the survey were honest in their self-report.

Scope and Delimitations

This study focused on MI knowledge and the attitudes of clinicians who reside on St. Croix and work with adolescents with acting-out behavior. . It included three variables: knowledge of MI, attitudes toward MI, and likelihood to use MI.

Limitations

This study had 3 limitations. The survey, an adapted version of the MIKAT, had not previously been used for analyzing the effectiveness and efficiency of studying knowledge and attitudes of clinicians about MI. To remediate this limitation, a pilot study of the measure was conducted before carrying out the full study. While a Cronbach's alpha was to be completed on this survey to confirm the reliability of the population, instead, a Kuder-Richardson 20 reliability analysis was conducted to assess the reliability of the dichotomous MIKAT variables, knowledge and attitude. This approach was used instead of Cronbach's alpha when the variables are dichotomous (Traub, 1994)

A second limitation of this study was nonresponse bias, whereby participants may not complete or return the survey (Peress, 2010). This can influence the outcome of the results by a low rate of returned surveys and a low sample size. To help overcome this limitation, participants received two reminder e-mails.

Another limitation of this study was that participants completed this study without the researcher present to respond to questions. Thus, there was the possibility the participants could have found some questions ambiguous. As a result, the participants were provided the contact information of the researcher to respond to any questions or concerns. Bias issues are also of concern when conducting this study. Survey respondents

may respond in a socially desirable manner (Van de Mortel, 2008). Participants, however, were told that all their responses would be confidential with no threat of tracking the respondent of each survey. Additionally, my own biases could have impacted the findings of the study: I coded each study. To help limit my coding biases, each survey was automatically coded via SurveyMonkey.

Significance

The focus of this study was to measure the knowledge about and attitudes toward MI among a sample of clinicians who provide services to adolescents with acting-out behavior. A survey-based study may be beneficial in better understanding the needs of clinicians working with acting-out adolescents. This in turn, may contribute to the knowledgebase for developing effective interventions to promote changes in problematic behaviors with adolescents.

Miller and Rollnick (2009) suggested MI is simple to understand but requires time to develop expertise to implement. As a result, interactive trainings have become a primary means of introducing, promoting, and enhancing extensive training in MI with clinicians (Miller & Rollnick, 2002, 2009). MI promotes a positive therapeutic alliance and collaborative relationship with the client through reflective listening, a major skill necessary to attain in developing one's therapy skills (Miller & Rollnick, 2002, 2009). The opposite of the client-centered approach, in which a therapist chooses to be confrontational, directive, and less collaborative, is not as effective for working with clients in a variety of settings (Gaume, Gmel, Faouzi, & Daeppen, 2009).

In this study I sought to demonstrate a need to increase knowledge of and training in MI as a way to best help teens alter self-destructive behavior, and, thus possibly contribute to positive social change.

Summary

Researchers have found a need to develop training for clinicians who work with adolescents with acting-out behavior. MI is an evidenced-based intervention that has been found effective with a host of adult populations, including substance users, and for health-related behaviors. According to the research, there was a lack of efficacy when using MI with adolescents. Although researchers have seen the value of using MI with adolescents with acting-out behavior, there are few research studies with adolescents in this area. Furthermore, the manner in which MI is conducted with a client is affected by the skill level and style of the therapist. There has been no research in training clinicians to use MI with adolescents with acting-out behavior. The knowledge of and attitudes toward MI are important variables to study to predict the likelihood of clinicians to use MI with adolescents to help develop more effective MI training practices.

Chapter 2, the literature review, covers the theoretical foundation, background of MI, training of clinicians, and an analysis of the past research on knowledge and attitudes of clinicians about MI.

Chapter 2: Literature Review

Introduction

The purpose of this quantitative study was to examine whether clinicians' knowledge and attitudes about MI predicted their likelihood of using the MI approach. The participants were clinicians on St. Croix, U.S. Virgin Islands, who provided therapeutic services to adolescents with acting-out behavior. Miller and Rollnick (2002) described MI as counseling method that requires careful training by clinicians. Thus practitioners' knowledge about and attitudes toward MI are important to study to further the development of more effective MI training practices.

In Chapter 2, I will review the literature search strategy, background, and theoretical foundations of MI, and review the relevant literature. The review includes an analysis of research on knowledge and attitudes of clinicians about MI.

Literature Search Strategy

The literature search sought current and classic articles using the following databases: PsycINFO, PsycARTICLES, and Academic Search Complete. I also examined relevant organizational websites, such as the Motivational Interviewing Organization. The following search terms were used: *interviewing*, *motivational adolescents teenagers*, *aggressive behavior*, *motivational interviewing, sex, self-determination theory, transtheoretical model, client-centered theory,* and *positive psychology*.

The Origins and Purpose of MI

MI, a relatively new form of psychological intervention, was developed by Miller (1983) in his work with problem drinkers. Miller collaborated with Rollnick (1991) to develop research-based practice of MI, which resulted in a practical manual for practitioners. Miller and Rollnick based the practice of MI on the stages of change (1984, 1986), part of Prochaska and DiClemente's TTM, a model based on a client's intention to change and the motivation for change (1984, 1986). MI is closely connected with TTM because MI is a psychotherapy intervention that can guide clients through the stages of change, from precontemplation to termination (DiClemente & Velasquez, 2002).

Miller and Rollnick (1991, 2002) used the five stages of the TTM to describe stages of change in clients: (a) precontemplation, (b) contemplation, (c) preparation, (d) action, and (e) maintenance. Miller and Rollnick (1991, 2002) described these changes relative to the changes in working with an individual using MI as the intervention. During the precontemplation stage, clients are not ready to discuss change. This stage is central in MI, because the role of clinicians is to help clients by eliciting talk of change. Physicians first developed eliciting change talk (See definitions section) for smoking cessation (Butler et al., 1999; Rollnick, Butler, & Stott, 1997). This method includes asking clients two questions to determine readiness for change (Prochaska & DiClimente, 1984):(a) Ask clients to rate on a scale of 1 to 10 (1 being least and 10 being most motivated) their motivation and interest in making a change in their behavior; (b) Ask clients to rate on a scale of 1 to 10 their confidence in making that change. The

assumption is that clients want to make the change. Next, the therapist asks clients about their numeric responses: (a) Why did you choose this number rather than 1 or 2? and (b) What would it take to get you to a higher number?

MI and Transtheoretical Stages of Change Model

The transtheoretical model (TTM) is also known as the stages of change model (Boston University School of Public Health, 2013; Norcross, Krebs, & Prochaska, 2011; Prochaska & DiClemente, 1984, 1986; Prochaska, DiClemente, & Norcross, 1992). Prochaska and DiClemente (1984, 1986) developed TTM in the late 1970s and began publishing their work in the 1980s. This model evolved from studies that examined the experiences of smokers who quit on their own, along with those who required further treatment (Boston University School of Public Health, 2013). TTM is a model of intentional change that focuses on the decision making of individuals and assists clinicians in understanding the reasons for clients' motivation for change (DiClemente et al., 1991; McConnaughy, DiClemente, Prochaska, & Velicer, 1989; Prochaska et al., 1994). Prochaska et al. (1994) studied the behavior of individuals at various levels of motivation for change in behavior. These behaviors included juvenile delinquent behavior, unhealthy eating behaviors, and substance use. The researchers found individuals were more motivated to change behaviors when they were encouraged to identify and elaborate on the pros and cons of their behavior. According to Prochaska et al., change is even more enhanced and emphasized when the TTM is used in conjunction with other models and interventions of changing behavior.

A key difference between MI and TTM is that while TTM focuses on the stages needed for change (Prochaska & DiClimente, 1984), MI focuses on the motivation for change (Miller & Rollnick, 1991). For example, when meeting with an adolescent client who is indicating readiness to stop running away after getting shot while on runaway status. TTM would indicate the client is ready for change as the client is on the stage of preparation. MI would indicate that the client is ready to change because the client is motivated to no longer be injured due to his last run away experience. TTM is a model that is based on the stages of intentions of change (Prochaska & DiClemente, 1984, 1986). MI, on the other hand, is a psychotherapy intervention that uses the stages of change as strategies to guide clients through the process of readiness to change (DiClemente & Velasquez, 2002). Therefore, TTM is the theoretical foundation from which the MI intervention is built.

Miller and Rollnick (1991, 2002) also incorporated unconditional positive regard as an important aspect in the practice of MI to promote change. Unconditional positive regard, developed by Rogers (1949) as part of client-centered theory, refers to the acceptance and support by clinicians of their clients. Miller and Rollnick (1991, 2002) described an unconditional positive regard of clients as part of the spirit of MI. While clinicians guide MI clients to promote change, client-centered therapy allows clients to guide the session. For example, a clinician practicing MI will focus on asking the client directly: What would it take to change your behavior? A clinician practicing client-centered intervention would ask: “What would you like to happen?” Miller and Rollnick

(1991, 2002) emphasized that the key difference between client-centered therapy and MI is the latter's focus on motivating change of behavior. Although MI appears to utilize key aspects of guiding principles developed by both TTM and client-centered theory, Miller and Rollnick (2009) described MI as an intervention that is not based on any particular theory or model; rather, the authors stated that MI is closely linked or related to such theories. This is somewhat contradictory to their previous statements indicated above, where they clearly noted that the practice of MI was based on stages of change associated with the transtheoretical model (TTM). Additionally, as stated previously, MI evaluates clients' motivation for change or to progress through the stages of change articulated by the TTM model. Therefore, MI and TTM are clearly related. It would appear that Miller and Rollnick's (2009) claim notwithstanding, MI is based at least in part on TTM.

Eight Stages of MI

According to Miller and Moyer (2006), success with clients is based on the training and competence its practitioners receive. Miller and Moyer identified eight stages of competence in MI to assist clinicians in better understanding the skills and expertise required when motivating clients to change behavior. These stages have not yet been researched for validity; instead, Miller and Moyer provided these stages as a basis of practicing fidelity to MI by clinicians. The following is a brief description of the stages of MI to illustrate the expected knowledgebase of clinicians using MI.

The first stage includes understanding the basic philosophy of MI embodied in the tenets of collaboration, evocation, and autonomy, referred to as the spirit of MI (Miller &

Rollnick, 2002). The second stage is described as acquiring basic client-centered counseling skills involving the use of open-ended questions, affirming the responses of clients, providing accurate reflections, and using summaries as needed (Miller & Rollnick, 2002). The third stage is explained as less focused on client-centered counseling and more on recognizing and reinforcing change talk (Miller & Rollnick, 2002). Miller and Moyers (2006) described the fourth stage as a focus on the ability of clinicians to ask, reflect, and emphasize statements about the motivation to change by using more reflective listening and asking fewer questions. The fifth stage is identified as the ability of clinicians to avoid confrontations and arguments with clients (Miller & Moyers, 2006). Stages 1 through 5 focus on the earlier phases of MI, while Stages 6 through 8 focus on the latter phases. At the end of Stage 5, clinicians have assisted clients with working on change and reducing resistance talk. Clients and clinicians then begin to transition into the sixth stage described by Miller and Moyers as developing a plan. According to Miller and Moyers, at the seventh stage, clients are encouraged to make affirmations about their commitment to change. Miller and Moyers described this stage as clients being encouraged to say "I will" make a change. This stage is similar to cognitive behavioral therapy (CBT), in which clients begin to make changes in their thoughts and behavior. In the final stage of MI, clinicians can use other interventions together with MI (Miller & Moyers, 2006).

Although the eight stages have not yet been researched to establish empirical validity, the stages can be used as a form of structure when evaluating MI training (Harris

et al., 2006). The eight stages of MI are provided as a guide for clinicians to develop competence in MI. Miller and Moyers (2006) pointed out the need for further research on the competence of clinicians with regard to their use of MI, and to promote a better knowledge-based understanding of the mechanics in the skills of clinicians.

Concerns About MI

Miller and Rollnick (2009), Amrhein, Miller, Yahne, Palmer, and Fulcher (2003), Hettema et al. (2005), and the Project MATCH Research Group (1997, 1998) have noted concerns about the training and practice of MI. Their concerns include the confusion of MI with other treatment models and other forms of interventions, such as the TTM, cognitive-behavioral therapy (CBT), and client-centered therapy. As well, they identified another concern as the lack of fidelity to MI principles by clinicians who assume knowledge of MI. Researchers have indicated that clinicians may lack understanding of MI principles even after the clinicians participate in training (Miller & Mount, 2001; Miller et al., 2004). Miller and Mount (2001 and Miller et al. (2004) found the lack of understanding is attributable to a lack of focus on developing effective trainings for MI. Hettema et al. (2005) indicated that MI interventions can benefit from being geared to a specific target population, and clinicians providing the intervention may benefit by being appropriately trained.

Skill-Set of MI

The majority of clinicians entering MI trainings view MI as a skill that is assumed to be inherent in clinical training, or one that can be taught to clinicians to make their

clients do as the clinicians say (Hettema et al., 2005; Miller & Rollnick, 2009). Miller and Rollnick (2009) indicated that an important aspect of training clinicians is emphasizing that MI is a specific skill-set developed with a combination of intensive training, and acquired with consistent practice over a period of time. This skill-set includes the development of knowledge and attitudes of clinicians about MI. Leffingwell (2006) described an MI attitude as one consistent with the principles of MI, including the ability of clinicians to recognize that their views may be affected by clinicians' biases, which can result in myths and assumptions associated with the behavior of clients. For example, clinicians must be able to recognize that they may have a bias that can influence the way they view clients from a particular cultural group. Hettema et al. (2005) suggested that the attitudes of clinicians practicing MI could impact their fidelity to MI practices. Therefore, one important reason to understand clinicians' perspective of MI is to develop ways to increase fidelity to its practice for effective interventions with clients.

Spirit and Practice of MI

Miller and Rollnick (1995, 2002, 2009) described the *spirit* of MI as an interpersonal style that includes collaboration, evocation, and autonomy. Moyers, Miller, and Hendrickson (2005) theorized that the collaborative relationship is based on a partnership or egalitarian relationship with clients. This partnership with clients was found effective in treatment outcome (Moyers et al., 2005). Additionally, Moyers et al. found that educating clients, providing advice, and becoming confrontational with less collaboration increased clients' resistance to change. Therefore, opposition to the MI

interpersonal style decreased treatment outcome (Gaume et al., 2009). On the other hand, evocation is when the clients themselves elicit positive beliefs or reasons for change (Miller & Rollnick, 2002). Evocation is viewed as a method that promotes the autonomy of clients. As there is great respect for the autonomy of clients in MI, this style has been found to increase treatment outcome with clients (McMurran, 2009; Moyers et al., 2005). Overall, MI encourages clinicians to allow clients to be in charge of the change process and the amount of their own change that occurs (Miller & Rollnick, 2002).

Clinicians' practice of MI methodologies has also been found to be effective in initial and long-term positive behavioral changes in clients, with a corresponding decrease in recidivism rates (McMurran, 2009). MI is described as a directive, client-centered approach that is used to elicit behavioral change in clients through helping them explore and resolve ambivalence (Miller & Rollnick, 2002, 2009). This approach has been found effective with adults and adolescents alike (Burke et al., 2003; Jensen et al., 2011). Miller and Rollnick (2009) credited MI's effectiveness to specific techniques that are central across psychotherapy fields while also maintaining techniques specific to MI. One technique includes Rogers's model of client-centered therapy. Rogerian skills include acceptance, expressing empathy, and remaining nonjudgmental, which are described as a part of the spirit of MI (Rogers, 1949). Burke et al. (2003), Jensen et al. (2011), and McMuran (2009) indicated the importance of fidelity to MI standards, and emphasized the need for clinicians to receive appropriate training in the practice of MI so that they will be able to motivate changes in the behavior of clients. Researchers and

clinicians must take into account those techniques described as part of the spirit of MI to develop effective interventions that will promote changes in adolescents with acting-out behavior.

The main aspect of MI is to motivate change (Smedslund et al., 2011). This is a key point emphasized to clinicians during MI trainings (Madson, Loignon, & Lane, 2009). As noted by Smedslund et al. (2011), a key feature in motivating change is to develop a discrepancy between the present behavior of clients and their future goals. This process is said to occur when clients realize a difference between their current functioning and their desired functioning. Miller and Rollnick (2002) and Smedslund et al. found that the process of developing discrepancy involves four guiding principles of MI: (a) expressing empathy, (b) rolling with resistance, (c) developing discrepancy, and (d) supporting self-efficacy. Each aspect of this process outlines the role of clinicians in practicing MI.

Smedslund et al. (2011) indicated that both the ability and skill of clinicians in MI play a key role in supporting the self-efficacy of clients. This support occurs by building on clients' beliefs and motivations for change. For example, if clients are not sure about making a change, clinicians could ask what would happen if they do make a change or what concerns them about making a change (Miller & Rollnick, 2002). The use of MI skills allows clinicians to work with clients to reflect on past successes with change, restructuring failures as learning experiences, and planning attempts to change with care

(Smedslund et al., 2011). These MI skills further suggest that training clinicians is an important step in the effective implementation of evidenced-based practice.

Resistance in MI

According to Miller and Moyers (2006), clinicians using the term *resistant* with clients can further distance clients from clinicians. This can result in the elevation of the role of clinicians while the role of clients is pathologized and reduced in importance (Harris, Aldea, & Kirkley, 2006). According to Harris et al. (2006), to further promote the role of clients, clinicians should adapt to the stage of change of clients rather than clients adapting to the stage of change of clinicians to decrease resistance with the client.

Resistance is described by Harris et al. (2006) as a component that should be assessed based on the characteristics of both clients and clinicians. In this stage, the resistance of clients can involve withdrawal, defensiveness, denial, and confrontation. Harris et al. described a component of working through resistance by clinicians creating an environment that will allow clients to feel confident and promote active participation. Learning the reason why clients enter therapy allows clinicians to understand their clients better and further promotes the development of ambivalence. According to Miller and Rollnick (2006), *ambivalence* is the conflicting feelings about the negative and positive aspects of a behavior. When ambivalence is fostered, clients become less resistant and more open to discussions about changing a behavior (Harris et al., 2006). For example, clinicians can discuss the pros and cons of changing the behavior with clients. When clinicians promote a discussion on the pros and cons of changing behavior, clients are

believed to recognize the benefits of changing their behavior and become more open to discussing the process of changing behavior. Based on this information, when clients are more open to discussing change, clients are also more likely to work on changing their behavior. When used appropriately, the resistance of clients can become an asset in the process of behavioral change (Harris et al., 2006).

Change Talk

Hettema et al. (2005) found that the manner of talk that clients embrace is a predictor of the outcome of whether clients decide to change their behavior. In MI, such talk can be referred to as *change talk* (Miller & Rollnick, 2002). Sustained talk is the view that clients have about the benefits of maintaining the status quo, satisfaction with present behavior, and doubt or distrust about change.

Hettema et al. (2005) asserted that MI is based on a conscious directive about change; therefore, clinicians must be able to identify when clients indicate the need, reason, benefit, and desire to change (Miller & Rollnick, 2002). Change talk is deemed an important aspect of the process because it plays a role in predicting outcomes (Amrhein, et al., 2003; Hettema et al., 2005; Moyers et al., 2007). These research studies emphasized the importance of continuing research in change talk because of discrepancies in results of change talk.

Although Hettema et al. (2005), in their meta-analysis of 72 studies, found evidence of clinicians increasing change talk by recognizing resistance and eliciting change talk, there was contradictory evidence for verbalizing change. Verbalizing change

talk was not necessarily a commitment to change, but rather indicative of a desire to change (Hettema et al., 2005). A major factor for inconsistencies was the varying results in the Hettema et al. meta-analysis. These findings included inconsistent results about training of clinicians and their fidelity to MI. According to Hettema et al., the knowledge of MI and attitudes toward its use, as well as the ability of the clinicians providing services in many of the studies were unknown and played a role in the differences of the results between the studies. Hettema et al. also maintained the need for clinicians to be trained in recognizing and eliciting change talk to effectively prepare clients for readiness to change behavior. These findings further emphasize the need for consistency when teaching clinicians MI skills.

Commitment to Change

Miller and Rollnick (2009) pointed out that MI focuses on motivation and commitment to change behavior while CBT focuses on teaching new skills and reconditioning. According to Miller and Moyers (2006), if clients are ready to take action, it is more effective to use other interventions at this point. MI is believed to be effective when clients lack motivation to make change. When clients have resolved their ambivalence about change and are motivated to make a change, other therapeutic interventions become more effective (Hettema et al., 2005; Miller & Rollnick, 2009). Continuing to use MI after clients have already made a commitment to change can decrease motivation to continue change (Hettema et al., 2005). Therefore, clinicians who continue to focus on behavioral change using MI with clients who have already

committed to changing their behavior are actually acting counterproductively to the needs of clients. This is an important consideration in the training of clinicians to ensure clients' needs are met.

Theoretical Foundation of MI

MI is a behavioral change model based not on a single theory but rather has developed from a variety of theories (Lundahl & Burke, 2009). Lundahl and Burke (2009) explained that the foundation of MI is based on several theories about the motivation that drives behavioral change. MI's formula is described as "knowledge multiplied by motivation, divided by resistance equals change" (Lundhl & Burke, 2009, p. 1233). The relationship with clients as described by stages of change has been found to be an important aspect in the equation to maintain knowledge and motivation, and decrease resistance. The clinician's goal is to become more knowledgeable about the client's point of view as a way to increase rapport, which in turn is believed to increase the client's motivation and to decrease resistance (Lundahl & Burke, 2009). The clinician-client relationship is further promoted using a client-centered approach, collaboration, and empathy. Various researchers have promoted theories and models associated with MI, including embracing a positive psychology theory (Wagner & Ingersoll, 2008), the transtheoretical stages of change model (Norcross, Krebs, & Prochaska, 2011), client-centered theory (Miller, 1999), and SDT (SDT; Miller & Rollnick, 2012). Although other theories can also be deemed as related to MI, for the

purpose of this study, the theories outlined below focus on implementing MI by practitioners working with adolescents.

MI may be the best intervention to use with adolescents as research has found that MI is most effective with individuals who are angry, defiant, and oppositional (Musser & Murphy, 2009; Project MATCH Research Group, 1998; Woodall, Delaney, Kunitz, Westerberg, & Zhao, 2007) and who were otherwise considered less ready for change (Corrigan & Rusch, 2002; Resnicow, Jackson, Wang, Dudley, & Baranowski, 2001). Similarly, adolescents who display anger, defiance, and opposition to treatment fit the profile of those who are well suited to respond favorably to MI interventions (LaChance, Ewing, Bryan, & Hutchison, 2009). The development of MI interventions for angry, defiant, and oppositional adolescents can potentially benefit not only the needs of clients but also the needs of clinicians. This dissertation may contribute to the knowledgebase needed to develop effective trainings for clinicians using MI with acting-out adolescents. The need for researchers to develop specific MI training for clinicians working with adolescents with acting-out behavior is an important gap in the research that warrants further investigation.

MI and SDT

SDT was first developed by Deci and Ryan at the University of Rochester (SDT, 2013). SDT is viewed as a grounding framework of MI (Miller & Rollnick, 2012) and is the main theory that drives this study. According to SDT, human beings have an innate need for autonomy, competence, and relating to others (Markland et al., 2005). Just as

clients have an innate need for autonomy, competence, and relating to others that increases treatment outcome (Moyers et al., 2005), clinicians also have a similar need that improves their skills in providing MI (Hettema et al., 2005). According to Markland et al. (2005) motivation is promoted when individuals are in an environment that meets these needs.

Moyers (2004) highlighted clinicians' need to be provided an environment that promotes motivation to learn MI. Individuals are moved by the needs of assimilation and cohesion and will grow autonomously when such basic needs are met (Markland et al., 2005). This is unlike extrinsic motivations, which involve goals that individuals do not actually value, and result from pressure to act, resulting in additional negative emotions, including a sense of shame and guilt. Instead, SDT is based on autonomous motivation, which pertains to goals that individuals genuinely value (Markland et al., 2005).

Autonomous motivation is thought to lead to more learning, determination, and congruence between values, behavior, and overall well-being (Markland et al., 2005). Autonomous motivation results in proactive individuals seeking an improved lifestyle or way of living that also increases positive emotions such as joy, interest, and satisfaction. Hettema et al. (2005) emphasized the need for congruence in the skill level of clinicians who use MI. Given the results of the research findings discussed above and the analysis of the SDT theory, an SDT may well be a suitable model for clinicians.

Miller and Rollnick (2012) described the relationship of MI with SDT as more of a "flirtation than a marriage" (p.9). Deci and Ryan (2012) made similar observations and

stated that although MI and SDT share similarities, there are also differences. According to Rollnick and Miller (2012), MI focuses on the three main aspects of SDT: autonomy, relating to others, and competence. Clinicians practice MI with five general principles in mind: expressing empathy, developing discrepancy, avoiding arguments, rolling with resistance, and supporting self-worth.

Miller and Rollick (2012) noted two limitations with MI: the lack of focus on social context, and the shift in focus from autonomy to quantity of change talk. MI focuses more on the interpersonal and intrapersonal relationships between therapists and their clients. A relationship between MI and SDT may help put more emphasis on social context. SDT integrates the role of social influences and the impact on the autonomy of clients, and how these social influences can affect the outcome of clients. Social influences include a broad domain such as employment, family history, influence of peers, and religious affiliation. A suggestion that might unite the two would be to focus on the relationship between the therapist and the client while also taking into consideration the influence of social context. For example, a clinician working with a client should not only emphasize the therapeutic relationship with the client but how the influence of family or friends may be affecting the client's lack of motivation to change behavior.

The second limitation delineated by Miller and Rollnick (2012) is the shift in focus from autonomy to quantity of change talk. Deci and Ryan (2012) stated that although the past focus of MI was autonomy, the quantity of change talk has become the

central focus of MI. Although quality of change talk is related to autonomy (because MI is focused more on quantity of change talk) the focus of MI has shifted from quality to quantity, a core difference in approach between MI and SDT (Deci & Ryan, 2012). Therefore, another suggestion to consider is training clinicians who are trained in MI to emphasize not only the amount of the change talk but to balance this approach with a focus on the characteristics of the change talk. Although MI and SDT are separate from each other, as more studies occur analyzing the two approaches, more effective interventions can be developed for clinicians.

The SDT theory with MI has been used as an intervention primarily in the area of promoting health changes with clients. For example, Reniscow et al. (2008) found that using an MI intervention with SDT theory to promote lifestyle change of eating fruits and vegetables resulted in significant results, particularly with participants who were provided with autonomy-based interventions. Additionally, Hardcastle, Blake, and Hagger (2012) found that using MI as an intervention and including SDT as one of the grounding theories was effective in promoting physical activity as a lifestyle change in a disadvantaged community. After 6 months, the results were significant, including 28% of variance of change recorded in physical activity with support of friends (Hardcastle et al., 2012). Self-efficacy and social support were used as SDT based approaches in the study. Researchers suggested the need for continued studies to empirically test and determine the similarities, differences, and effectiveness among these two approaches when combined (Deci & Ryan, 2012; Hardcastle et al., 2012; Markland et al., 2005; Miller &

Rollnick, 2012; Reniscow et al., 2008). Based on these findings, it appears that linking SDT with MI has contributed to effective outcomes.

Although there are core differences between MI and SDT (differences in focus on social context and on autonomy), the developers of both MI (Miller & Rollnick, 2012) and SDT (Deci & Ryan, 2012) continue to maintain the need for further studies using MI as the intervention and SDT as the theory. A host of researchers has found that MI and SDT are a good match for each other (Deci & Ryan, 2012; Hardcastle et al., 2012; Markland et al., 2005; Miller & Rollnick, 2012; Reniscow et al., 2008). These findings substantiate the usefulness of using SDT as the framework theory in this dissertation.

MI and Client-Centered Theory

As previously indicated in the background information, MI was developed in part from the framework of Rogers's client-centered theory, which emphasizes empathy, congruence, and unconditional positive regard by clinicians with their clients (Lundahl & Burke, 2009; Rogers, 1949). Empathy, described as the vicarious experiencing of feelings, thoughts, and attitudes of others, promotes the ability of clinicians to understand the perspective of their clients (Rogers, 1949). Unconditional positive regard is believed to allow clients to feel accepted and understood by clinicians without being judged. Clients are accepted as worthwhile human beings by clinicians. Congruence refers to the state of agreement, such as when both physical body language and verbal language of clinicians are in agreement with each other, which allow clinicians to be transparent to their clients (Lundahl & Burke, 2009; Rogers, 1949). Miller (1999) indicated the role of

clinicians involves providing *agape,* as developed by Rogers (1949), a selfless form of love that improves the well-being and growth of clients. This selfless love can promote the clients' self-interest and motivate clients to work on self-improvement (Miller, 1999). When clinicians provide agape with clients, clients feel accepted for their ambivalence and struggles. The wholeness of the experience is accepted and understood as the side that wants to change, and the side that wants to stay the same. Such acceptance by clinicians provides an environment of trust and safety for clients to discuss ambivalence toward change, explore current behavior, and the decision to change (Miller, 1999).

A client-centered perspective is one of the foundations of the training of MI, and is believed to be a necessary component of training clinicians in the use of MI. The client-centered approach, as noted by Miller and Rollnick (2002), reflects the tone of clinicians. The client-centered approach uses an indirect approach, while MI uses a direct approach because MI is a goal-oriented and intentional approach. In MI the clinician elicits and guides the discussion to change talk (Miller & Rollnick, 1991), whereas in client-centered theory the client guides the sessions and does most of the talking (Rogers, 1949). Miller and Rollnick (2009) emphasized that, although MI is a client-centered approach, it is not the driving framework of MI. As a result, based on Miller and Rollnick's (2002) description of the differences between MI and client-centered theory, I determined that although client-centered theory is a guiding principle in MI, it would not be the best fit for the theoretical framework in this study. Instead, I focused on a more

directive approach in obtaining information from clinicians by describing each portion of the survey and sharing with them the need for their participation.

MI and a Positive Perspective Theory

MI was introduced through a negative reinforcement perspective. That is, the goal is to decrease negative behavior (Wagner & Ingersoll, 2008). Wagner and Ingersoll (2008) proposed that using a positive perspective merged with MI can further increase the ability of clinicians to implement effective interventions with clients. From a positive emotions perspective, MI can be used to learn openness to new experiences and build support with other resources. Interest in expanding oneself can be said to begin with the development of curiosity and willingness to consider other alternatives. Therefore, openness, from a positive perspective, can assist clients in resolving ambivalence to change and in moving forward with making changes. As clients move forward in changing their behavior, clients develop new skills and gain a different perspective and insight into changing behavior. According to Wagner and Ingersoll, such changes can also improve self-esteem, confidence, mood, and sense of purpose.

From a positive perspective, clients can learn to develop discrepancy in how their life can become more positive. This is a strategy called decisional balance (Wagner & Ingersoll, 2008). Clients emphasize their need to change behavior and focus on the resulting positive benefits rather than emphasizing the negatives of their current behavior. Clients are asked to list the pros and the cons of changing behavior. The MI practitioners then use core MI skills such as asking open questions, affirmations, reflections, and

summaries to express empathy. MI skills are also used to increase understanding of the thoughts of clients on the pros and cons of making change. By clinicians demonstrating an understanding of the attachment of clients to a targeted behavior, clients feel better understood and are more motivated to explain the cons of behavior. Clinicians then look at barriers to changing the targeted behavior and discuss with clients the benefits of changing the behavior. Clients are believed to be more motivated to be open to change because they feel understood by clinicians who took time to understand and reflect the perspective of clients (Wagner & Ingersoll, 2008).

Training clinicians working with adolescents to include a positive perspective in the use of MI can increase the ability to promote change for adolescents. Another strategy in MI is envisioning by encouraging clients to imagine the future with the behavioral change (Wagner & Ingersoll, 2008). According to Wagner and Ingersoll (2008), clients look at moving forward with curiosity and interest in changing behavior versus looking at past experiences. MI includes the strategy of values clarification, whereby clinicians discuss with clients various values that are important to them as a motivation to make changes. As clients review the behavior and the conflict in value, there is believed to be increased motivation to change the behavior (Wagner & Ingersoll, 2008).

The positive perspective can be used to promote change when working with adolescents because it promotes openness to new experiences and building support. Wagner and Ingersoll's (2008) proposal to use a positive perspective theory with MI requires further research; their proposal has not been studied for efficacy in practice with

MI. Nonetheless, it has been introduced with the potential to work effectively with the MI approach. Empirical studies, however, have not yet occurred to determine the effectiveness of MI with positive psychology. Overall, despite a high potential, there is a lack of research between MI and a positive perspective. Thus, positive perspective was not selected as the grounding theory for this study.

Clinicians and MI

This section is a review of clinicians and MI, organized into the following subsections: characteristics of clinicians, influence of clinicians in MI, and knowledge and attitudes of clinicians about MI.

Characteristics of Clinicians

Miller and Rollnick (2009) asserted that the most effective MI applications stem from a collaborative, empathetic, and directive relationship between clinicians and clients. To understand this relationship, researchers have focused on the characteristics of clinicians and the amount of time needed for continued development of MI skills (Carpenter et al., 2012; Mitcheson et al., 2009). Carpenter et al. (2012) studied several characteristics, including the age, gender, ethnicity, and counseling style of clinicians. Understanding the characteristics of clinicians and their skill levels is believed to be an important consideration in training development. These characteristics and the baseline skill level were found to be significant factors in the process of developing training for clinicians. Miller et al. (2004) also conducted a study on the characteristics of clinicians and their skill level. The authors described characteristics in their study as traits of

nurturance, self-esteem, feelings, achievement, and aggression. Miller et al. did not find that characteristics affected the skill level of clinicians. Rather, all clinicians who participated in their study made significant gains after training despite differences in characteristics. Miller et al. indicated that about 85% of the participants were at graduate level, which may have influenced the outcome of their study. Further research is needed on assessing the effectiveness of training clinicians who use MI with acting-out adolescents (Carpenter et al., 2012; Miller et al., 2004). Such findings (Hettema et al. 2005; Leffingwell, 2006; Miller & Rollnick, 2009) suggest that a better understanding of the knowledge and attitudes of clinicians about MI may contribute to empirically supported treatment studies of best practices in training clinicians working with adolescent populations.

Influence of Clinicians in MI

Hettema et al. (2005) found that MI increases motivation to change and decreases resistance to change. The degree to which clients voice reasons for change is strongly related to the amount of change they exhibit later (Hettema et al., 2005). The more clients provide reasons for not embracing change, the less likely they may be to follow through with changes.

The manner of talk clients embrace is a predictor of the outcome. Amrhein et al. (2003) found a specific expression to determine the outcome of clients about change that they termed *commitment language*. Moyers et al. (2007) also found that clients with higher levels of change talk decreased their levels of drinking alcohol (i.e., improved

their alcohol drinking outcomes by drinking less) while clients with higher levels of sustained talk had no improvement or increased their levels of drinking alcohol (worse drinking outcomes). Overall, the language used by clients is believed to predict their success with subsequent behavioral change.

Moyers et al. (2007) found the clinician-client relationship is affected by the language of clinicians. Clinicians who use language consistent with MI tend to have clients with higher levels of change talk (Vader, Walters, Prabhu, Houck, & Field, 2010). Clinicians who use language inconsistent with MI tend to have clients with higher levels of sustained talk. In one counseling session, MI statements by clinicians were found to be more likely to be followed by change talk, while inconsistent MI language by clinicians were more likely to be followed by sustained talk (Moyers & Martin, 2006; Moyers et al., 2007). Findings varied in research linked with the language of clinicians and the outcome of clients.

Miller et al. (1993) found that more confrontation with clients predicted less change in the targeted behavior with clients. Gaume et al. (2008), on the other hand, failed to find a direct link or effect between the language of clinicians and outcome of clients. Vader et al. (2010) found that personalized feedback with clients (rather than only using MI inconsistent language) further increases change talk and decreases sustained talk. Personalized feedback includes a comprehensive assessment of the targeted behavior of clients and provides clients with information on the results of the assessment. It may be that the MI style is more neutral and facilitative, whereas MI talk with feedback

is more personalized and provides clients with difficult information, such as discussing the resistance of clients to change. More research is needed due to inconsistencies in the research on the parts of clients' language that are best in predicting outcomes (Martin, Christopher, Houck, & Moyer, 2011). Overall, the findings here illustrate the importance of trainings for clinicians to focus on knowledge of the use of commitment language such as change talk with clients.

Clinicians have a major role of impact in conducting MI with clients, as they elicit and promote change talk (Magill, Stout, & Apodaca, 2012). Change talk has been deemed an important aspect of the counseling process. Change talk impacts the neural circuitry of the brain that leads to behavioral change (Houck, Moyers, & Tesche, 2012). This is promising research on the major impact of the brain when there is effective implementation of MI. According to Magill et al. (2012), as clients continue to review their ambivalence by discussing the benefits and the disadvantages of change, trained clinicians focus more on promoting an environment that is nonjudgmental and nondemanding to assist in resolving the ambivalence of clients.

Magill et al. (2012) emphasized the role of clinicians is to remain mindful to focus not on ambivalence but to instead assist clients to move forward by making changes in their behavior. Magill et al. found that focus on resolving the conflict over the ambivalence promoted a greater commitment to change. Focus on commitment to change increased the outcome of clients to change their behavior (Magill et al., 2012). Magill et al. emphasized the role of clinicians and their ability to recognize change talk and the

impact of change talk on the treatment outcome of clients. These findings further highlight the continued gap of developing training for clinicians in MI. A major need in assisting clients in improving their outcome to make a change is for clinicians to become trained in focusing less on ambivalence to change and more on the commitment to change.

Training for clinicians working with different clients varies according to the issues clients present. Ambivalence manifests differently in addictive and nonaddictive behavior (Resnicow et al., 2002). According to Resnicow et al. (2002), nonaddictive behavior may require less time to work through ambivalence because nonaddictive behavior may not involve the same degree of resistance or the same level of interpersonal issues involved in addictive behavior such as chemical dependency. Different approaches for addictive and nonaddictive behavior would be needed. For example, in the case of nonaddictive behavior, the pattern of change would be different because there may be no need to focus on such behaviors as abstinence and relapse.

Clinicians should be trained to be aware of the dangers of providing intervention in multiple areas of behavioral change at the same time (Resnicow et al., 2005). Addressing multiple behaviors at once, in part because of challenges related to memory, can cause clients to decrease efficacy, motivation, and overall behavioral change. Focusing on more than one behavior at a time can be overwhelming for both clients and clinicians because each behavior has multiple aspects. Adolescent clients are in a developmental stage whereby their neurocognitive and social needs are still developing

and this impacts their ability to reason, judge, plan, and maintain self-control (National Institute on Drug Abuse, (2012). Thus, when clinicians focus on a change with respect to one behavior, they must consider and monitor multiple areas throughout the intervention. Clinicians are not only focusing on working with clients to make changes about the identified behavior, but also on monitoring ambivalence, clients' language, and moving at the pace of clients (Resnicow et al., 2005).

Miller and Rollnick (2002) discussed how MI can meet the specific needs of clients based on how clinicians can facilitate the MI intervention using a group, individual, family treatment interventions. Resnicow et al. (2005) emphasized the importance of clinicians being trained in MI based on the specific needs of the population they service. Miller and Rollnick (2009) indicated that MI is not based on a one-size- fits-all model, and, therefore, services provided by clinicians are based on the efficacy of treatment for the specific needs of clients. The need to develop specific MI training for clinicians working with adolescents with acting-out behavior is one catalyst for this dissertation study. A major aspect of developing this training is the need to study the specific demographics and other characteristics (the knowledge of and attitudes about MI) of clinicians working with this population.

Another skill important for training in MI is to promote development of the ability of clinicians to monitor their influence on clients (Apodaca, Magil, Longabaugh, Jackson, & Monti, 2013). The influence of clinicians can be affected when significant others, such as family members or friends, are a part of the session. This is especially true when

working with adolescents because adolescents are especially sensitive to social cues influenced by peer groups and family members (National Institute on Drug Abuse, 2012; Slavet et al., 2005); however, more research is needed on the extent of the influence of including significant others in the session (Jensen et al., 2011). Apodaca et al. found the influence of clinicians with clients can be reduced by the level of influence of the significant others on clients. Significant others have a more influential role than clinicians in eliciting change talk (Apodaca et al., 2013). During such sessions, the role of clinicians reflects that of facilitators by encouraging discussions to elicit change talk between significant others and clients.

According to Apodaca et al. (2013), the role of clinicians is to promote supportive discussions from significant others and reframe behavior that is confrontational or unsupportive. Researchers have focused on the use of MI in individual and group therapy approaches. Limited studies have been conducted on the use of MI with significant others.

Although Slavet et al. (2005) conducted research including use of MI in a family setting with adolescent clients, findings revealed the need for continued research in this area. Slavet et al. viewed the research as promising for clinicians to be trained in use of MI with adolescents and their family to promote change in behavior. More research is needed in the role of significant others within the framework of MI (Miller & Rose, 2010), particularly the role of significant others and MI with adolescents.

Knowledge and Attitudes of Clinicians About MI

Demands for training increase as scientists continue to study the efficacy of MI. Trainings impact the effectiveness of interventions and evidence-based treatments (Burke, Arkowitz, & Dunn, 2002; Burke, Arkowitz,, & Menchola, 2003; Hettema et al., 2005). Knowledge and attitudes are important domains in evaluating the effect of training (Leffingwell, 2006). Researchers have conducted several clinical trials and have studied the knowledge of clinicians of MI before and after training clinicians who work with substance abusers and problem drinkers, and found an improvement in knowledge of MI after training (Miller & Mount, 2001; Miller & Rose, 2009; Miller et al., 2004; Rubel, Sobell, & Miller 2000). Similarly, Leffingwell (2006) devised a measure, the Motivational Interviewing Knowledge and Attitudes Test (MIKAT), to determine the attitudes and knowledge of MI trainees before and after training.

Leffingwell's (2006) participants were home care providers for child and family members in the state of Oklahoma. Training focused on providing treatment for family members with substance abuse. Results between pretraining and posttraining indicated increases of attitudes (MI consistent beliefs) and knowledge (correct identification of MI behavior). Although Leffingwell indicated the need for further studies to better understand the impact of knowledge and attitudes on the effectiveness of training, a review of the literature suggested there has been a lack of follow-up research in this area (Manthey, 2013; Dear, 2014). In addition, there has been no study on the knowledge and attitudes of clinicians working with adolescents who demonstrate acting-out behavior.

Further research is needed on the intervention and training of MI with clinicians (Carpenter et al., 2012; Hettema et al., 2005). Thus far, researchers have focused on the impact of the characteristics of clinicians and MI (Carpenter et al., 2012), the amount of time needed for continued development of MI skills (Mitcheson, Bhavsar & McCambridge, 2009), and the development of a measure to study the knowledge and attitudes about MI (Leffingwell, 2006). The current research gap includes a need to identify the knowledge of and attitudes about MI of clinicians working with adolescents with acting-out behavior, the focus of the current study.

Conclusions

Problem behavior is frequently accompanied by a lack of motivation to change, despite the consequences of the behavior (Miller et al., 2003). The persistence of maladaptive behavioral patterns is a common aspect of pathological clinical conditions. MI is a counseling technique that guides individuals to work through ambivalence in changing behavior by using a collaborative and client-centered style of counseling (Carpenter et al., 2012; Miller & Rollnick, 2002). Miller and Rollnick (2002) first developed MI to treat substance abusers, a population known for its lack of motivation to change and high recidivism rate. Central features in the development of MI are the stages of change in the TTM model developed by Prochaska and DiClemente (1984) and the unconditional positive regard of client-centered theory developed by Rogers (1949). Since then, MI has been adapted and enhanced and used as a form of treatment for different types of populations. These populations include those needing to stop smoking

and other obsessive compulsive behavior (Dunn, Neighbors, & Larimer, 2006; Hodgins, Currie, & el-Guebaly, 2001) such as those needing to convert anorexic and bulimic eating patterns to more healthy ones (Lundahl & Burke, 2009).

In a meta-analysis of 119 studies, MI was found to be robust in research (Lundahl et al., 2010) and growing as a form of evidence-based practice for a wide variety of problems requiring behavioral change (Lundahl et al., 2010; Lundahl & Burke, 2009). Researchers have found MI to be effective in working with populations wishing to change their behavior, including substance abusers (Ball et al., 2007; Brown & Miller, 1993; Connors, Walitzer, & Dermen, 2002; Morgenstern et al., 2012), adolescent substance abusers (Burke, Arkowitz, & Dunn, 2002; Burke, Arkowitz, & Menchola; Colby et al., 1998; Fox, Towe, Stephens, Walker & Roffman, 2011; Harris, Aldea, & Kirkley, 2006; Jensen et al., 2011; Michael, Curtin, Kirkley, Harris & Jones, 2006; Monti et al., 1999; Peterson, Baer, Wells, Ginzler, & Garrett, 2006), those with health related behavior (Bolger et al., 2010; Hettema, Steele, & Miller, 2005; Irby, Kaplan, Garner-Edwards, Kolbash, & Skelton, 2010; Olsen, Smith, Oei, & Douglas, 2012), those with problems with intimate partner violence (Musser & Murphy, 2009), those with posttraumatic stress disorder (Murphy, Thompson, Murray, Rainey, & Uddo, 2009), and those with depression, anxiety, and eating disorders (Slagle & Gray, 2007).

Continued research is needed on the effectiveness of MI with different populations, as findings are mixed (Hattema et al., 2005; Miller et al., 2007). Miller et al. (2008) indicated that these mixed results may be attributed to the implementation of

similar interventions with different populations without taking into consideration the need for specialized interventions based on the culture and individualized needs of clients. Donavan, Rosengren, Downey, Cox, and Sloan (2001) and Miller et al. (2003) found no difference in their results of intervention using MI versus no MI. All the MI providers in the study were highly trained and experienced in MI. Several factors were indicated as possibly impacting the results, including ethnic minority status, low income at poverty level, readiness for treatment, and high response to treatment. Other researchers with similar factors did obtain results indicating use of MI as effective (Baker, Boggs, & Lewin, 2001; Stotts et al., 2001). Thus, there are mixed findings among these research studies.

Poor outcomes of studies can also be attributed to methodological limitations including inadequate length of follow-up, low rates of completing treatment, and low fidelity to MI principles by clinicians (Resnicow et al., 2002). The attitudes and knowledge of clinicians about MI has been found to be an important consideration in better understanding competence and fidelity to MI as such a consideration can impact the effectiveness of treatment with clients (Hattema & Hendricks, 2010; Miller et al., 2004; Moyers, 2011). Research in MI training has included studies on the attributes and skills of clinicians (Carpenter et al., 2012) and the time required for the development of MI skills (Mitcheson, Bhavsar & McCambridge, 2009). To understand the effectiveness of MI with the adolescent population, an important consideration is believed to be the knowledge and attitudes of clinicians who work with this population. Researchers on the

use of MI with adolescents have focused on risky sexual behavior including unprotected sex, and adolescents who were placed in detention centers for stealing or drug involvement (Bryan et al., 2009; Dermen & Thomas, 2011; Naar King et al., 2006; Rosengrad et al., 2007; Slavet et al., 2005). The adolescents who were placed in the detention centers received treatment in the area of family therapy. Family therapy was viewed as an important aspect of changing behavior through MI. There is a gap in research in the area of understanding the use of MI with adolescents with aggressive behavior including verbal and physical aggression, running away behavior, and hypersexualized acting-out behavior.

Although there is research on the efficacy of MI with the adult population practicing healthy habits and cessation of substance use (Hettema, Steele, & Miller, 2005), research is lacking on the efficacy of MI with the adolescent population (Feldstein & Ginsburg, 2007; Higa-McMillan, Powell, Daleiden, & Mueller, 2011; Miller, Villanueva, Tonigan, & Cuzmar, 2007). Researchers with the adolescent population have focused mainly on substance use (D'Amico et al., 2012; Jensen et al., 2011; Moyers, 2011; Naar-King, 2011). Further research is needed in order to assist in examining other areas of behavioral change, specifically motivating behavioral change in adolescents. Jensen et al. (2011) indicated in their findings that treatment of the adolescent population is different from treatment of the adult population, because special interventions are required for adolescents based on their specific needs (e.g., age and development). Jensen et al. suggested there is a need for specialized interventions in MI to be developed for

adolescents. Researchers (Jensen et al., 2011; Miller et al., 2008; Moyers 2011; Naar-King, 2011; Naar-King et al., 2006; Slavet, 2005) have asserted the need for further research on the efficacy of MI and the adolescent population.

Summary

In Chapter 2 I presented an overview of the history of the use of MI with various populations. I reviewed the literature on the evolution of MI, particularly as used with adolescents with high risk behavioral concerns. The literature consistently suggests that training clinicians to promote competence and fidelity in MI is a main focus in the effective implementation of MI. In particular, I reviewed literature on the need to promote training geared toward specific populations, such as adolescents with acting-out behavior. Specific theories central to the needs of high risk adolescents were examined and emphasis was placed on SDT as the main theoretical framework of this study. The chapter concluded with the need for continued research on the training of clinicians to work with adolescents with high risk behavior. This was specific to clinicians working with adolescents with aggressive and hypersexualized behavior.

Effective interventions with the adolescent population include effective trainings in the practice of MI. One manner of evaluating the effectiveness of trainings is studying the knowledge and attitudes of clinicians. I examined whether knowledge and attitudes of clinicians about MI predict their likelihood of using the MI approach. I also examined the combined impact of clinicians' knowledge of MI and attitudes about MI on clinicians'

intention to use MI. Clinicians studied were those who work with adolescents with aggressive and hypersexualized behavior.

Chapter 3 will include the purpose of the study; research design and rational; methodology, which will include the population, sampling and sampling procedures, procedures for recruitment, participation, and data collection, instrumentation, and data analysis plan; threats to validity and reliability; informed consent and ethical considerations; and summary.

Chapter 3: Research Method

Introduction

The purpose of this quantitative study was to examine if clinician knowledge of and attitudes toward MI predict the likelihood of clinicians using MI. This chapter provides information on research design and rationale, methodology, population, setting and sample, procedures for recruitment, participation, and data collection, instrumentation and operationalization of constructs, threats to validity and reliability, and ethical procedures.

Research Design and Rationale

The independent variables in this study were knowledge and attitudes, as calculated from an adaptation of the Motivational Interviewing Knowledge and Attitudes Test (MIKAT; Leffingwell, 2006 [see Appendix B and Appendix C]). The dependent variable was the likelihood of clinicians to use MI with adolescents who exhibit acting-out behavior. The study used a cross-sectional survey design. According to Leffingwell (2006), a survey is best to collect information on the clinicians' knowledge and attitudes . The MIKAT is a cost-effective and cost-efficient instrument for obtaining the needed information within a short time. The adapted version of MIKAT used true/false and multiple-choice formats. The adaptation to the MIKAT was only in terms of the response format, whereby the terms *substance abuser* and *addict* were changed to *adolescents*. Also, the terms *substance use* and *addiction* were changed to *acting-out behavior*. Various researchers (Leffingwell, 2006; Miller & Mount, 2001; Miller et al., 2004; Rubel

et al., 2000) have studied training outcomes for clinicians using MI using surveys and clinical coding.

The following research questions guided this study:

RQ1: To what extent does clinicians' knowledge of MI, as measured by the MIKAT, predict the likelihood of their use of the MI approach?

RQ2: To what extent does clinicians' attitudes towards MI as measured by the MIKAT, predict the likelihood of use of the MI approach?

RQ3: What is the combined impact of clinicians' knowledge of/attitudes about MI on clinician intention to use MI?

The goal of this study was to measure the current knowledge of, and attitudes toward MI, of clinicians who provide services to adolescents with acting-out behavior. The training of participants ranged from a bachelor's degree to a postdoctoral degree in psychology, social work, and counseling. The study required two phases, a pilot study and a full study.

Pilot Study

Since adaptations were made to the MIKAT, an initial pilot study was required to determine the validity of the measure for the current population prior to carrying out the main study. The pilot study required 10 days to collect and analyze information.

Full Study

The full study required approximately an additional 30 days to obtain data from all clinicians and an additional 30 days to analyze the data. The 30-day timeframe

allowed me to contact the various clinicians throughout St. Croix requesting for the clinicians to confidentially complete the survey on SurveyMonkey.

Methodology

Population

The target population were clinicians who work with adolescents with acting-out behavior. The clinicians were currently working on St. Croix, U.S. Virgin Islands, and were required to have a minimum of a bachelor's degree. In the absence of published information on the number of individuals with degrees in psychology, social work, or counseling who are residing in St. Croix, I contacted the two professional associations that have members who counsel children, about the number of their respective members with degrees in psychology, social work, and counseling. I obtained this information from the Virgin Islands Government, Department of licensing and consumer affairs, St. Croix office (personal communication, March 30, 2014). These organizations are the American Counseling Association of the Virgin Islands (ACA) and the Association of Virgin Island Psychologists (AVIP). Approximately 200 clinicians are a part of the total target population of individuals meeting such educational requirements on the island, based on information from the Association of Virgin Islands Psychologists, National Association of Social Workers – Virgin Islands chapter, and American Counseling Association – Virgin Islands chapter. The Association of Virgin Islands Psychologists indicated about 30 or more individuals with a minimum of a bachelor's degree reside on St. Croix. The American Counseling Association indicated about 100 counselors reside

on St. Croix. The National Association of Social Workers indicates that there about 70 individuals with a minimum of a bachelor's degree in social work that are invited to their activities on St. Croix. The two professional associations (ACA and AVIP) were able to provide only the total number of individuals and indicated for additional information I would need to make contact with the individuals themselves.

Setting and Sample

A purposive sampling of clinicians practicing on St. Croix were utilized to complete the survey. Data was analyzed using the student version of the Statistical Package for the Social Sciences (SPSS). The study was conducted based on the mandates of the Walden University's Institutional Review Board (insert the IRB approval number here) to ensure that all participants of the study are ethically protected.

G*Power was used to arrive at the minimum sample size for a multiple regression analyses (Erdfelder, Faul, & Buchner, 1996). The chosen effect size, power, and alpha levels are the standards for computing power analysis in social scientific research (Leedy & Ormrod, 2013). Based on the assumption that the Multiple regression would have two independent variables, a .15 effect size (medium effect), an alpha level of .05, power of .80 (80% chance of detecting a significant effect if one actually exists in the real world), the minimum sample size for this analysis is 68. A medium effect is the accepted standard effect size used in social scientific research (Cohen, 1988; Erdfelder, Faul, & Buchner, 1996; Hair et al., 2010; Tabachnick & Fidell, 2012). Therefore, a sampling of at least 68 respondents was adequate to detect a medium-sized effect. A medium effect size

allows for the researcher to decrease in probability of type one and two errors while also increasing chances of determining if there actually exists a statistical significance between the variables (Field, 2012; Leffingwell, 2006; Maxwell, 2000; Miller & Mount, 2001; Rosnow & Rosenthal, 1989).

Minor adaptations was made to the MIKAT. The word substance abuser was changed to *teenagers*, and the words *alcoholic/substance use* was changed to *acting-out behavior* (see Appendix C). Thus, a pilot study was required to test for validity of the adapted MIKAT before the main study can be conducted. The pilot study included a minimum of 10 participants, based on the guidelines provided by Cocks and Torgerson (2013) and Suresh and Chandrashekara (2012). Cocks and Torgeson indicated that the sample size calculation for a pilot study of a random clinical trial study should be at least 9% of the total required sample size of the main study. Suresh and Chandrashekara indicated that for purposive sampling, the design effect requires an additional 10% of the sample size. This increases the pilot study population to at least 19% of the total required sample size. Therefore, 19% of the minimum sample size of 55 results in a pilot study sample size of 10. According to Suresh and Chandrashekara (2012), an additional 10% of the sample size population should be targeted to allow for individuals who may not respond and missing data from those who do respond. Therefore, an additional five participants received a survey for the pilot study, with the goal of obtaining at least 10 valid surveys for the pilot study.

Procedures for Recruitment, Participation, and Data Collection

The survey instrument was created with the SurveyMonkey online tool. An e-mail message was sent to ACA and AVIP members from the ACA and AVIP administrators requesting their participation in the study. Social Workers were contacted directly by the researcher as she has all of their e-mail addresses via previous professional relationships. The e-mail included basic information about the purpose of the study, the length of time needed to complete the survey, the deadline for completing it, and an initial set of screening/inclusion criteria. After a minimum period of 3 weeks, I sent two reminder e-mails to promote participation in the survey. The two reminder e-mails were sent 7 days apart. A link to the online survey tool was generated and sent to all 200 clinicians. The screening questions (as discussed in the instrumentation section below) was used to select only those clinicians who work with adolescents with acting-out behavior and who have a valid e-mail address (see Appendix C). ACA and AVIP indicated they communicate with their members and affiliates via e-mail correspondences and were willing to e-mail the members about the study. This was the first method of recruitment. I obtained e-mail addresses of all social workers, counselors, and psychologists who were not members of the National Association of Social Workers (NASW), ACA, and AVIP. Given that they were not affiliated with these organizations, they would have not received an e-mail from the professional organizations. The second method of recruitment was to disseminate the e-mail via the ACA of St. Croix. Third and finally, the AVIP delivered the survey e-mail to the group's members who have bachelors, masters, and doctoral degrees in

psychology. The NASW-VI chapter membership committee indicated that a vast majority of social workers are not members of NASW. Thus, the NASW was not used as a method of reaching members. Instead, I e-mailed the individuals directly as I have the e-mail addresses for these individuals. To guard against respondents taking the study multiple times, respondents were asked if they have already taken this study in the screener.

Prior to participating in the study, informed consent was presented to each participant. When respondents clicked on the survey link, an informed consent form was presented detailing the purpose of the study, confidentiality, how the study will be used, and the respondents' rights associated with taking this study. Before the respondents proceeded to partake in the study, they had to click a button that indicates the respondent read and agreed to the contents of the informed consent (see Appendix A). Consent was obtained from participants for both the pilot study and the full study. No personally identifiable information was collected from the respondents. Instead, each respondent who took the survey were given a unique numerical identifier generated by SurveyMonkey.

Instrumentation and Operationalization of Constructs

In this section, the survey instruments will be reviewed. The survey included three measures: a section to screen participants for the study including obtaining informed consent, a demographic section, and an adapted version of the MIKAT.

Screening section of survey. The first step of the study was obtaining informed consent, in which participants reviewed the informed consent document (Appendix A) via Survey Monkey.

and provided a request to click a button that indicated the respondent has read and agreed with the contents of the informed consent.

In Step 2 of the study, potential candidates were screened using three screening questions (Appendix A). The first question asked if the respondent worked with adolescents with acting-out behavior, which were described as verbal and physical aggression, running away, and hypersexualized acting-out behavior. Hypersexualized acting-out behavior was referred to as excessive sexual behavior or continuously taking part in sexual behavior without concern of risk to oneself or others. A second question in the screening section asked about the education level of respondents. This was also recorded as demographic data. The third question asked if the respondent had previously taken this survey. If respondents' answers indicated that they have read and signed the informed consent form, worked with adolescents with acting-out adolescents, and had at least a bachelor's degree and had not previously taken part in this study, they were linked directly to respond to the demographic questions. If they did not meet all of these criteria, they were thanked for their interest for participating in the study and told that they do not qualify for the study.

Demographic section of survey. Step 3 of the study includes the demographic questionnaire (Appendix E) which recorded: number of years of practice, number of

years working with adolescents with acting-out behavior, ethnicity of clients (this was a multiple select question), and ethnicity of clinician. Again, no other personally identifiable information was be collected in the survey (e.g. names, date of birth, phone number, addresses). At this step too, all respondents in the data file was referenced using an arbitrarily assigned ID number in the Survey Monkey site. Once the survey is completed, it was open to view and taken by the dissertation committee members.

Adapted version of MIKAT in survey. In S3 of this study I used the MIKAT to determine current clinician attitudes and knowledge of MI. The MIKAT was developed by Leffingwell (2006), a clinical psychologist and associate professor and associate director of clinical training at the Department of Psychology at Oklahoma State University. The MIKAT was developed to measure the knowledge and attitudes of clinicians about MI. Leffingwell used this test as a pretest and posttest before and after MI training. Leffingwell found the MIKAT both efficient and effective at measuring changes. The goal of the MIKAT is to provide information to trainers on the effectiveness of the training, and to provide direction in efficacy of MI trainings. Although the study is not a pretest and posttest, the MIKAT is an effective instrument to use because ultimately it measures the knowledge and attitudes of clinicians about MI. Furthermore, Leffingwell encouraged using the MIKAT not only in the form of a pretest and posttest but also as a tool to develop effective trainings.

The adapted MIKAT questionnaire consists of correct and incorrect statements (See Appendix E). The first 14 true or false statements focus on the attitude of the

clinician. Sample statements included: “teen agers with acting out behavior must accept their problems before they can get help,” “if teenage clients are resistant to talk about changing acting behaviors,” “direct confrontation are required to help the person change,” “counselors should emphasize personal choice over client, including acting out behavior.” Correct answers get a score of 1 while incorrect answers get a score of 0. Scores across all 14 attitude questions were be summed to produce a total attitude score for each respondent. High scores are associated with higher attitude and lower scores are associated with less attitude. The questionnaire also included a checklist of 15 counseling behaviors also referred to as MI strategies that Leffingwell (2006) included, with five prescribed strategies, seven proscribed strategies, and three neutral strategies (See Appendix E). Leffingwell indicated the responses selected would indicate the knowledge of the clinicians about MI. Sample proscribed, prescribed, and neutral behavior questions are in Appendix F. Examples of proscribed strategies include “breakdown denial” and “give direct advice.” Examples of prescribed strategies include “rolling with resistance” and “express empathy.” Finally, examples of neutral strategies include “educate about risks” and “confront resistance.” High scores are associated with higher MI knowledge, and lower scores are associated with lower MI knowledge.

In a pilot study, Leffingwell (2006) examined the validity and effectiveness of MI training with 71 child and family home-based care providers with experience in social work and child welfare field. This group is similar to the participants, who are also providers to adolescents. The MIKAT was administered before the training and after the

training. Results indicated that there was a significant improvement in MI knowledge and attitudes from the pretest to the posttest, $t(70) = 5.72$, $p < .01$. Since then, various searches indicate three other published studies have used or adapted the MIKAT. Hohman, Doran, & Koutsenok, (2011) conducted a study using the MIKAT to determine the effectiveness of MI training outcomes with correction officers. The pretest and posttest results were similar to the outcomes of Leffingwell's study. Hohman, Doran, & Koutsenok (2009) reported internal consistency reliability with a cronbach alpha of .84. They also found that participants who attended the training with previous MI training scored higher on the pretest than those without previous training. Manthey (2013) conducted a pilot study for employment case managers using an adapted version MIKAT developed specifically for employment case managers in a vocational rehabilitation setting. The adapted MIKAT for vocational rehabilitation was used in this study as a pretest and post test measure. A copy of the adapted MIKAT was not available within the article for perusal. Results were reported as $t(19) = -14.59$, $p < .001$. Manthey indicated the results should be interpreted with caution due to a small and convenient sample size. Manthey indicated the MIKAT as effective in measuring training outcome. Dear (2014) conducted an evaluation of MI measures as a part of a thesis study and described the MIKAT as a measure that required study as it lacked studies as a measure of MI. Dear further indicated that the MIKAT lacked versatility as it was developed specifically for substance abusers and instead should be used with other populations in addition to substance abusers. Furthermore, Dear (2014) indicated her results lacked validity and

reliability due to a lack of participants needed for her study and her results were lower than Leffingwell's (2006) study and Hohman, Doran, & Koutsenok, (2009) study.

Leffingwell has provided open permission for the MIKAT to be used as a form of research with appropriate credit to the author (see appendix H). I also e-mailed Leffingwell and obtained permission from him to adapt the MIKAT to indicate "teenagers with acting-out behavior." Leffingwell indicated adaptions are approved contingent on him receiving the appropriate citation as the original developer of the MIKAT. He also stated that there is open approval already included within his published study of the MIKAT. The MIKAT lacks follow-up published studies and has never been adapted for adolescents with acting-out behavior. As adaptations were made to the MIKAT, I conducted a pilot study to determine the validity of the measure for the current population. There is limited reliability information on this instrument and the MIKAT has been used in three other studies besides the study described above.

The questionnaire was an adaptation of the MIKAT, which focuses on substance abuse (Leffingwell, 2006). It was adapted to reflect a focus on behavioral change in adolescents. The phrase *substance abusers* was substituted with *teenagers with acting-out behavior.* For example, the first original questions states, Substance abusers must accept their problems before they can get help (Leffingwell, 2006). The adapted question was, "Teenagers with acting-out behavior must accept their problems before they can get help." (see appendix E) Three additional questions were added to the MIKAT to determine the exposure and experience of clinicians with MI (See Appendix E, Questions

15, 16, 17). The questions included: How likely are you to use the MI approach with adolescents who exhibit aggressive and hypersexualized behaviors?
Have you attended any training in Motivational Interviewing? and Have you used the MI approach with clients?

Data Analysis

This section will provide information about the preliminary analysis and the main analysis.

Preliminary Analysis

Data cleaning is the process of amending or removing data that are incorrect, incomplete, or duplicated (Field, 2012; Pallant, 2013). In this survey research, I did conduct data cleaning by removing data that is incorrect, incomplete or duplicated. As mentioned previously, the data was collected using SurveyMonkey.

After the data was entered into SPSS and data cleaning was finalized, the first analysis conducted was a univariate descriptive statistics, providing information on the number and percentages of respondents by gender, number of years practicing, ethnicity of clinician and clients, and level of education. This analysis also included running frequencies and percentages for categorical data and means and standard deviations for continuous variables. Next, a Kuder-Richardson 20 reliability analysis was conducted to measure the reliability of the MIKAT by reviewing reliability of the dichotomous MIKAT knowledge and MIKAT attitude variables.

The second set of preliminary analyses was an assessment of the assumptions for use of multiple regression. These include the test of normality, linearity, and multicollinearity. For the test of normality, nonlinear relationships between dependent and independent variables may be present. The Shapiro-Wilk test was used to determine if such relationships are present (Field, 2012; Pallant, 2013). The linearity test determined if the data are nonlinear by comparing the plot between the observed versus the predicted values. If the data were nonlinear, then an option to work through this violation is applying a nonlinear transformation based on the results. Linearity was assessed by examining the plots of the standardized residuals and the standardized predicted values (Field, 2012; Pallant, 2013). If the plots were curvilinear, then the assumption of linearity is not violated. Multicollinearity refers to strong correlations between the independent variables that increase the standard errors, resulting in a misleading situation between the coefficients (Field, 2012; Pallant, 2013). SPSS was used to test for the variance inflation factors (VIF) among the independent variables. To fix this problem, the most intercorrelated variable was removed from the analysis.

Main Analysis

The multiple regression was conducted to evaluate the following research questions:

1. To what extent does clinicians' knowledge of MI, as measured by the MIKAT, predict the likelihood of their use of the MI approach?

The likelihood to use the MI approach is the dependent variable scored on a scale of 1 *(not at all likely)* to 5 *(extremely likely).* The knowledge of MI is the independent variable, where there are 15 checklist items in the knowledge section of the MIKAT See Appendix E). There are 5 items deemed correct answers (express empathy, role with resistance, developed discrepancies, support self-efficacy, and avoid argumentation). All correct answers were summed to produce a total score for each respondent.

H_{o1}: Clinicians' knowledge of MI, as measured by MIKAT knowledge scores, does not predict the likelihood of using the MI approach, as measured by MIKAT likelihood to use MI scores, among clinicians who work with adolescents who exhibit acting-out behaviors.

H_{a1}: Clinicians' knowledge of MI, as measured by MIKAT knowledge scores, does predict the likelihood of using the MI approach, as measured by MIKAT likelihood to use MI scores, among clinicians who work with adolescents who exhibit acting-out behaviors.

2. To what extent do clinicians' attitude towards MI, as measured by the MIKAT, predict the likelihood of MI approach use?

The likelihood to use the MI approach is the dependent variable scored on a scale of 1 *(not at all likely)* to 5 *(extremely likely).* Attitudes toward MI is the independent variable, scored using a dichotomous true or false scale where 0 is coded as the incorrect answer and 1 is coded as the correct answer (See Appendix E). All correct answers were summed to produce a total score for each respondent.

H_{o2}: Clinicians' attitude toward MI as measured by MIKAT attitude scores do not predict the likelihood of using the MI approach among clinicians who work with adolescents who exhibit acting-out behaviors.

H_{a2}: Clinicians' attitude toward MI as measured by MIKAT attitude scores do predict the likelihood of using the MI approach among clinicians who work with adolescents who exhibit acting-out behaviors.

3: What is the combined impact of clinician knowledge of/attitudes about MI on clinician intention to use MI?

To examine this question, the R squared of the model and the F value of the model was examined. If the F value is significant, then the model R squared value would have told us the combined impact of clinician knowledge of/attitudes about MI on clinician intention to use MI.

H_{o3}: Clinicians' knowledge of and attitude toward MI as measured by MIKAT attitude and knowledge scores do not impact clinician intention to use MI.

H_{a3}: Clinicians' knowledge of and attitude toward MI as measured by MIKAT attitude and knowledge scores do impact clinician intention to use MI.

Threats to Validity

This section will cover threats to internal validity, external validity and construct validity. External validity relates to factors that affect the studies ability to generalize to the real world (Creswell, 2014; Leedy et al., 2013). Internal validity relates to research procedures that effect our ability to draw reasonable conclusions from the results of the

study, and construct validity measures assess the degree that we are measuring what we actually intend to measure.

According to Creswell (2014) and Leedy et al. (2013), the survey used was an adapted version of the MIKAT, which was not previously analyzed for the effectiveness and efficiency of studying the knowledge and attitudes of clinicians. This could affect internal validity. For that reason, a pilot study was conducted before carrying out the full study. A second limitation of this study is the nonresponse bias. A low rate of returned surveys and a low sample sizes can influence the outcome of the results. This too could affect internal validity. To overcome this limitation, potential participants received a reminder e-mail to complete the survey. Another potential limitation of this study is that the participants completed this study without the researcher present to respond to questions. This is another factor that could have affected internal validity. Thus, the participants may have found some questions to be ambiguous. As a result, the participants were provided the contact information of the researcher to respond to any questions or concerns. Bias is another concern that can affect internal validity, which could result from individuals responding in a socially desirable manner. To limit that concern, participants were assured their responses were confidential, with no threat of tracking the respondent of each survey.

Elements that may affect external validity are samples limited to respondents on the Island of St. Croix. Additionally, the convenience sampling procedure may further

challenge the external validity of the study by adversely affecting the projectability of the study.

Finally, the MIKAT has limited reliability information and the MIKAT has been used in three other studies besides the Leffingwell (2006) study described above. Additionally, limited studies have been used with this instrument in which validation of this instrument was tested and confirmed.

Ethical Procedures

This study was conducted based on permission granted by and the ethical standards of the Walden University Institutional Review Board (IRB), approval # 09-08-15-0108233. This ensured the ethical protection of all participants in this research study. Respondents were given an informed consent statement prior to starting the survey to ensure they were aware that they were in involved in a research study, and that their informed consent to participate was required. If the person chose to participate in the study, this constituted their agreement with the content of the informed consent. After the completion of the survey, the respondent were thanked for their participation and provided with an e-mail address in case they have any questions. The respondents were able to withdraw from the study at any time without penalty, as stipulated in the informed consent form.

There was no deception or coercion involved in this research. Confidentiality was assured as there was no personally identifiable information collected in the survey. There was no anticipated exposure to mental or physical risk. Once the data was collected it was

downloaded from SurveyMonkey and stored on a secure computer that was used to analyze the data. The data will be kept by the researcher indefinitely on a secure computer in a zipped file that is password protected.

There was no identified conflict of interests in this study. Also, if respondents requested information on MI, they were referred to the MI website for more information (www.motivationalinterviewing.org).

Finally, participants were informed of the purpose of the study and were provided information on how to contact me if necessary, and that they could have withdrawn without penalty, at any time.

Summary

Chapter 3 included the research design and rationale, methodology (population, sampling procedures, procedures for recruitment, participation, and data collection, instrumentation and operationalization of construct), threats to validity, ethical procedures, and summary.

The purpose of this quantitative study was to determine the knowledge and attitudes of clinicians about MI. The research used a survey with a pilot study and a full study. Purposive sampling was used to collect the data to complete the survey. Contact information was collected through the professional organizations and licensing agencies. Data was collected using an adapted version of the MIKAT. The data was analyzed using the student version of SPSS.

The study was conducted in accordance with the mandates of the Walden University Institutional Review Board. This ensured all participants were ethically protected. Data collection was dependent on receipt of a survey from participants. Each participant was e-mailed a packet including an invitation letter that included a link to Survey Monkey, which guided each participant to a consent form, adapted version of MIKAT, and an additional questionnaire. The descriptive information included the educational level, years of experience, ethnicity of clinician, and ethnicities of clients served by the clinician. The participants received contact information for the researcher and dissertation chair to discuss any questions about the research study. The participants were also provided the contact information to reach a Walden University representative, such as a representative from IRB or the dissertation chair, to answer any questions about the rights of participants.

Chapter 4 will discuss the results of the statistical analysis of the study. This analysis will focus on answering the research questions. This chapter will include the results of the pilot study, data collection, results, and summary.

Chapter 4: Results

Introduction

The purpose of this quantitative study was to examine whether the knowledge and attitudes of clinicians about MI predict the likelihood of using the MI approach as an intervention in their clinical practice. The participants in this study were clinicians who provide therapeutic services to adolescents who exhibit acting-out behavior on the island of St. Croix, U.S. Virgin Islands. The research questions and hypotheses were as follows:

R1. To what extent does clinician knowledge of MI, as measured by the MIKAT, predict the likelihood of their use of the MI approach?

H_{o1}: Clinicians' knowledge of MI, as measured by MIKAT knowledge scores, does not predict the likelihood of using the MI approach, as measured by MIKAT likelihood to use MI scores, among clinicians who work with adolescents who exhibit acting-out behaviors.

H_{a1}: Clinicians' knowledge of MI, as measured by MIKAT knowledge scores, does predict the likelihood of using the MI approach, as measured by MIKAT likelihood to use MI scores, among clinicians who work with adolescents who exhibit acting-out behaviors.

R2: To what extent does clinician attitude toward MI as measured by the MIKAT predict the likelihood of use of the MI approach?

H_{o2}: Clinicians' attitude toward MI as measured by MIKAT attitude scores do not predict the likelihood of using the MI approach among clinicians who work with adolescents who exhibit acting-out behaviors.

H_{a2}: Clinicians' attitude toward MI as measured by MIKAT attitude scores do predict the likelihood of using the MI approach among clinicians who work with adolescents who exhibit acting-out behaviors.

R3: What is the combined impact of clinician knowledge of/attitudes about MI on clinician intention to use MI?

H_{o3}: Clinicians' knowledge of and attitude toward MI as measured by MIKAT attitude and knowledge scores do not impact clinician intention to use MI.

H_{a3}: Clinicians' knowledge of and attitude toward MI as measured by MIKAT attitude and knowledge scores do impact clinician intention to use MI.

This chapter covers the following: descriptive statistics of the respondent demographics; preliminary tests to determine if the assumptions of the multiple regression were met (these parametric assumptions included normality of the standardized residuals, linearity, and homoscedasticity); primary analyses to evaluate the research questions; , a summary of the findings.

Pilot Study

A pilot study with ten respondents was conducted to test the reliability of the adapted MIKAT for knowledge and attitudes. A Kuder-Richardson 20 reliability analysis was conducted to assess the reliability of the dichotomous MIKAT knowledge and

MIKAT attitude variables. This reliability approach was used instead of Cronbach's alpha because the variables were dichotomous (Traub, 1994). Reliability analysis for the adapted MIKAT knowledge produced a Kuder-Richardson 20 value of .595. This value is lower that the .7 minimum required. Further analysis indicated that the removal of Q2 (Which of the following are principles of a Motivational Interviewing approach to dealing with acting-out behavior?) increased the Kuder-Richardson 20 value to .711, which was an acceptable reliability based on the .7 minimum criteria (Traub, 1994). The reliability analysis coefficient for the adapted MIKAT attitude was .784. As the adapted MIKAT attitude questionnaire did not have to be modified, the study continued without further changes. No further reliability analyses were necessary for this study.

Data Collection

The target population included clinicians who worked with adolescents with acting-out behavior. The clinicians worked on St. Croix, U.S. Virgin Islands, and were required to have a minimum of a bachelor's degree. In the absence of published information on the number of individuals with degrees in psychology, social work, or counseling who were residing in St. Croix, approximately 200 clinicians were a part of the total target population of which 73 were respondents. As a result, there was a 36.5% response rate. The recruitment and data collection timeframe was 30 days and there are no discrepancies or derivations in the data collection methods or process stated previously in chapter 3.

73 clinicians completed the survey. These included 61 (83.6%) women and 12 (16.4%) men. A majority of respondents were Black (65.8%) and had a graduate degree (69.9%). Finally, 54.8% of respondents had at least 16 years of experience working in the counseling, psychology, or social work field. See Table 1.

Table 1

Frequencies: Demographics, Previous MI Usage, Previous MI Training, Likelihood to Use MI

	N	*%*
Gender		
Female	61	83.6
Male	12	16.4
Ethnicity*		
Black	48	65.8
Hispanic	7	9.6
White	11	15.1
Highest Degree Obtained		
Bachelor degree	22	30.1
Graduate degree	51	69.9
Years of Experience in the Field		
0-5 years	10	13.7
6-10 years	11	15.1
11-15 years	12	16.4
16-20 years	18	24.7
21-30 years	16	21.9
More than 30 years	6	8.2
Have you previously used the MI approach with clients?		
No	35	47.9
Yes	38	52.1
Have you attended any training in MI Interview?		
No	49	67.1
Yes	24	32.9
How likely are you to use the MI approach with adolescents?		
Not at all likely	3	4.1
Somewhat likely	22	30.1

Likely	29	39.7
Very likely	12	16.4
Extremely likely	7	9.6

* - denotes percentage does not equal 100%

Results

Preliminary Analysis

After the data were collected and input in to SPSS, frequencies were conducted to determine any errors or missing data. No errors or missing data was found. This result is typical when using an online survey tool such as Survey Monkey because for closed ended questions, respondents cannot input incorrect data. They can only leave the question blank. No questions were left blank.

After the data were checked, MI knowledge and MI attitudes scores were computed in two steps. First, for each respondent, all correct answers on the knowledge and attitudes questions were scored as 1 if the answer was correct and 0 if the answer was incorrect. Second, the number of correct responses for each respondent was computed by summing the scores. MI knowledge consisted of the sum scores of 13 questions and MI attitudes was computed from the sum of 4 questions. Once the scores were computed for both the MI attitude and MI knowledge variables, frequencies were performed to determine if there were any missing total scores, or errors in the calculations. There were no missing total scores or errors in the calculations.

Test of the regression assumptions were performed for each research question. Preliminary results were conducted to evaluate if the assumptions of the bivariate

regression were met for RQ1, which included normality of the standardized residuals, linearity, and homoscedasticity (Field, 2012; Tabachnick & Fidell, 2012). The results of the histogram of the standardized residuals indicate that the distribution was relatively normal, and therefore did not violate the assumption of normality (see Figure 1;. Field, 2012; Tabachnick & Fidell, 2012). Additionally, the plot of the standardized residuals and the standardized predictive values demonstrated no violation in homoscedasticity or linearity as the scatterplot pattern was rectangular in shape (See Figure 2; Field, 2012; Tabachnick & Fidell, 2012). It should be noted that the regression is a robust test. This means that even when violations of normality and homoscedasticity exist, the model will yield reasonably accurate p values (within ± .02 of the true p value) when the sample sizes are at least moderate, commonly accepted as at least 30 participants (Boneau, 1960; Schmider et al., 2010; Wilcox, 2001).

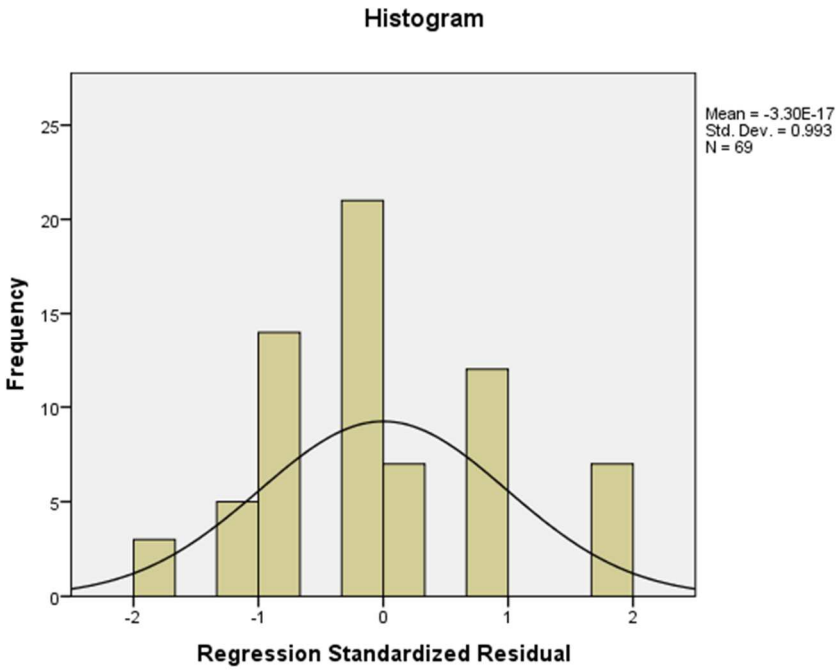

Figure 1: Histogram of the standardized residuals reveals a relatively normal distribution.

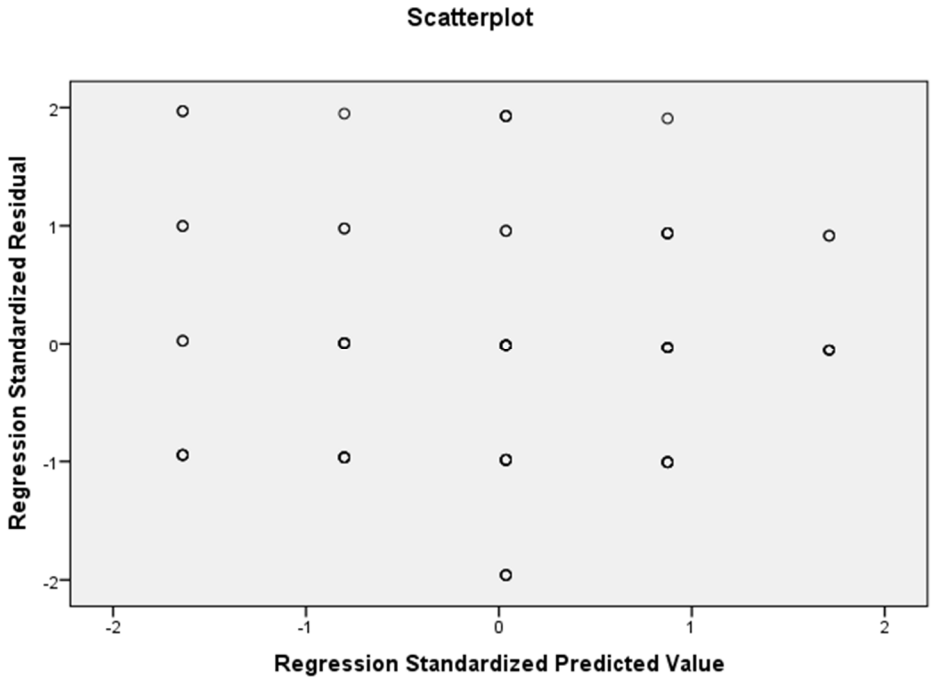

Figure 2: Plot of the standardized residuals and standardized predicated values indicated that there was no violation in the assumption of linearity or homoscedasticity as the scatterplot pattern was rectangular in shape.

Preliminary results for RQ2 indicated that the histogram of the standardized residuals deviated from normality (see Figure 3). However, the scatterplot of the standardized residuals and the standardized predicted values was rectangular in shape, which represented no violation of linearity or homoscedasticity (see Figure 4). Despite the violation in normality, the bivariate regression was still performed as it is a robust test for violations of normality (Boneau, 1960; Schmider et al., 2010; Wilcox, 2001).

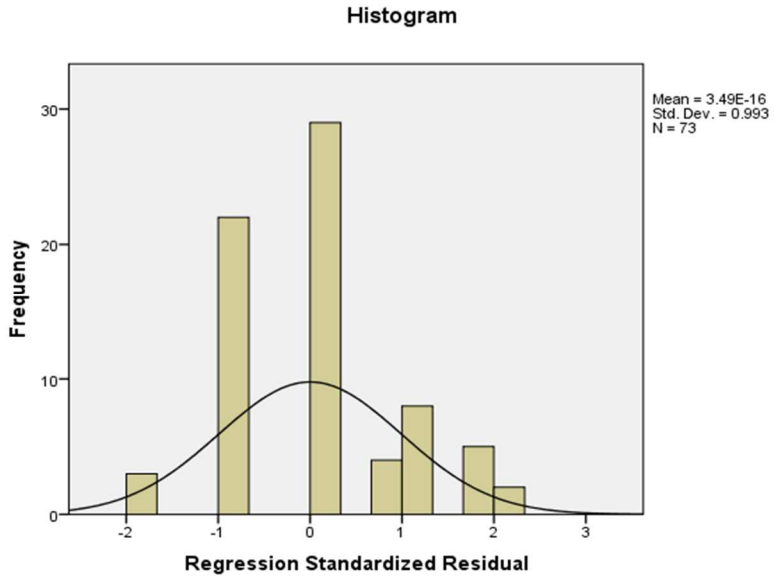

Figure 3: Histogram of the standardized residuals reveals a deviation from normality.

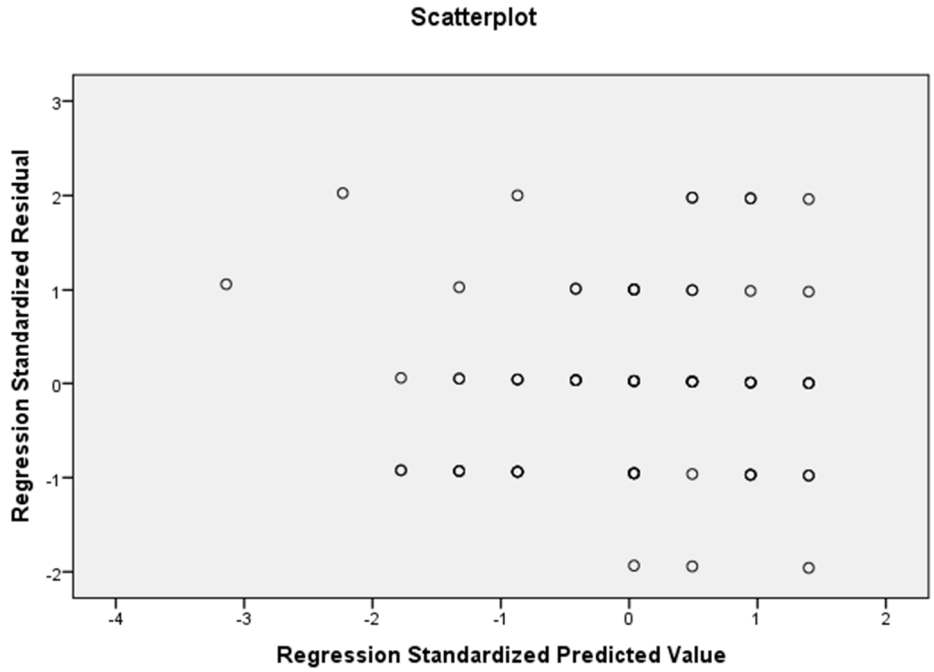

Figure 4: Plot of the standardized residuals and standardized predicated values indicated that there was no violation in the assumption of linearity or homoscedasticity.

For RQ3, the histogram of the standardized residuals produced a distribution that deviated from normality (see Figure 5). The scatterplot of the standardized residuals and the standardized predicted values produced plots that were random and dispersed in a rectangular pattern. This indicated that there was no violation in the assumption of linearity or homoscedasticity (see Figure 6). When two or more variables are included in a multiple regression, the degree of multicollinearity between the independent variables must also be checked. If the variable inflation factor (VIF) is below 10, then the assumption of low multicollinearity is not violated. The VIF was 1.185, so there was no violation in multicollinearity (see Table 10).

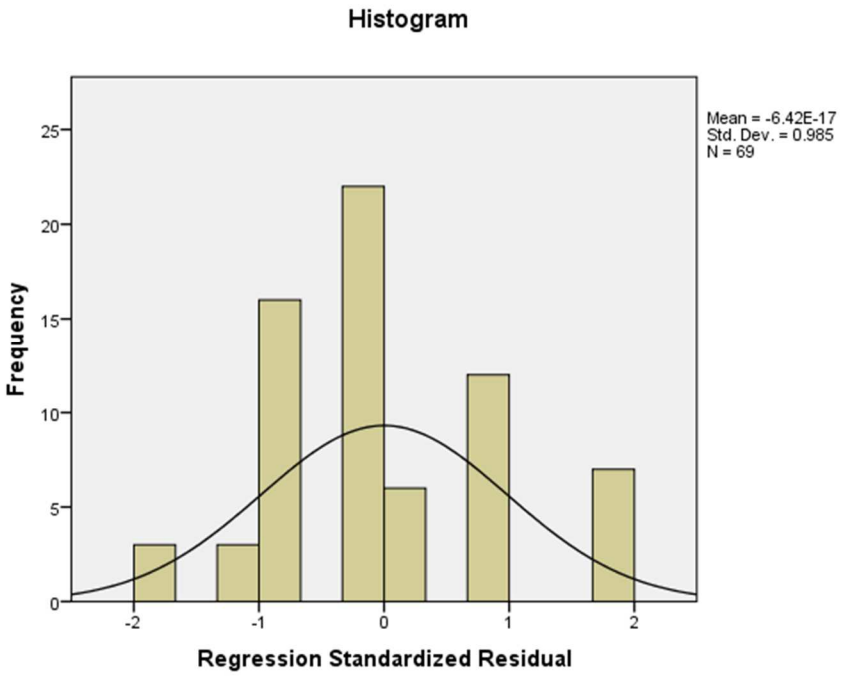

Figure 5: Histogram of the standardized residuals indicates a deviation from normality.

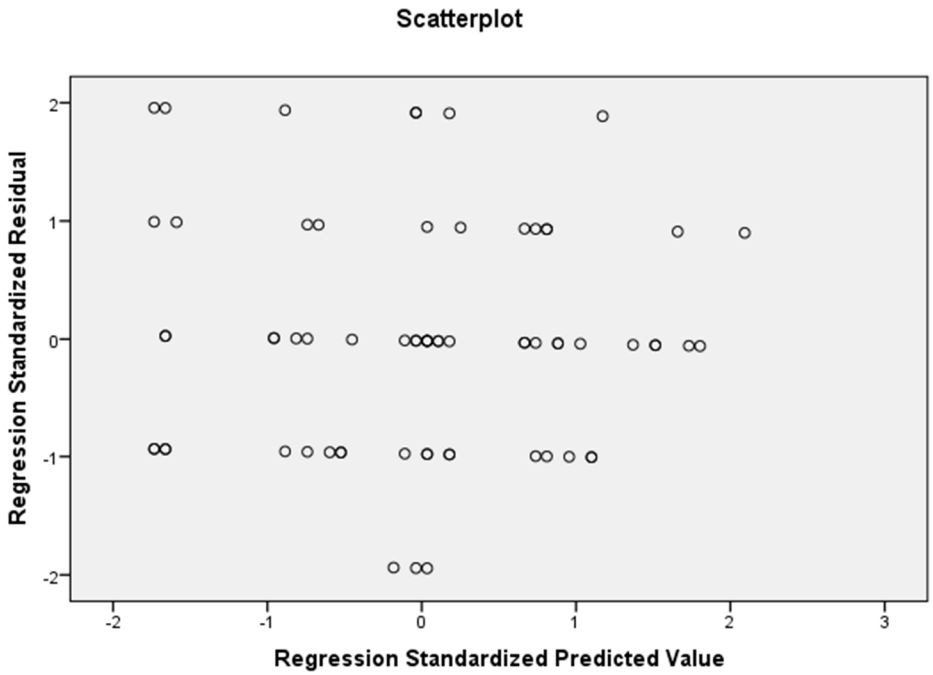

Figure 6: Plot of the standardized residuals and standardized predicated values indicated that there was no violation in the assumption of linearity or homoscedasticity.

Main Analysis

RQ1. To what extent does clinicians' knowledge of MI, as measured by the MIKAT, predict the likelihood of their use of the MI approach?

A bivariate regression was conducted to determine if MI knowledge was a significant predictor of likelihood to use the MI approach. MI knowledge was the independent variable, where scores ranged from 1 to 5 and low scores represented less knowledge and high scores represented greater knowledge of MI. The mean for MI knowledge scores was 3.04 (SD = 1.19). The dependent variable was likelihood to use

the MI approach, where scores ranged from 1 (not at all likely) to 5 (extremely likely). The mean for the likelihood scores was 2.97 (SD = 1.01).

The bivariate regression indicated that the model was not a significant predictor of likelihood to use MI, F(1, 67) = .041. Specifically, there was no significant linear relationship between MI knowledge and likelihood to use MI, beta = -.025, p = .841. As a result, the null hypothesis was not rejected (see tables 2 and 3).

Table 2

ANOVA Table: Likelihood to use MI Regressed on MI Knowledge

Model	*SS*	*df*	*MS*	*F*	*p*
Regression	.043	1	.043	.041	.841
Residual	70.942	67	1.059		
Total	70.986	68			

Table 3

Coefficients Table: Likelihood to use MI Regressed on MI Knowledge

	Unstandardized Coefficients		Standardized Coefficients		
Model	B	Std. Error	Beta	t	p
(Constant)	3.079	.341		9.016	.000
MI Knowledge	-.021	.105	-.025	-.202	.841

RQ2: To what extent does clinician attitude toward MI as measured by the MIKAT predict the likelihood of use of the MI approach?

Another bivariate regression was conducted to determine if MI attitudes were associated with likelihood to use MI. In this analysis, MI attitudes was the independent

variable, where scores ranged from 2 to 12, and the mean was 8.92 (SD = 2.20). The dependent was again likelihood to use MI.

Results of the multiple regression unexpectedly indicated that the model containing MI attitudes was not a significant predictor of likelihood to use MI, $F(1, 71) = .022$, $p = .882$. Therefore, MI attitudes was not a significant predictor of likelihood to use MI, beta = .018, $p = .882$. As a result the null hypothesis was not rejected (see table 4).

Table 4

ANOVA Table: Likelihood to use MI Regressed on MI Attitudes

Model	SS	df	MS	F	p
Regression	.023	1	.023	.022	.882
Residual	73.922	71	1.041		
Total	73.945	72			

RQ3: What is the combined impact of clinician knowledge of/attitudes about MI on clinician intention to use MI?

The final analysis was a multiple regression as it included both MI knowledge and MI attitudes as the continuous independent variables, and likelihood to use MI was the continuous dependent variable.

As expected, based on the results previously observed from research questions 1 and 2, the regression model containing both MI knowledge and MI attitudes was not a significant predictor of likelihood to use MI , $F(2, 64) = .134$, $p = .875$. Therefore, the null hypothesis was not rejected (see tables 5 and 6).

Table 5

ANOVA Table: Likelihood to Use MI Regressed on MI Knowledge and MI Attitudes

Model	SS	df	MS	F	p
Regression	.044	2	.146	.134	.875
Residual	69.707	64	1.089		
Total	70.000	66			

Table 6

Coefficients Table: Likelihood to Use MI Regressed on MI Knowledge and MI Attitudes

	Unstandardized Coefficients		Standardized Coefficients			
Model	B	Std. Error	Beta	t	p	VIF
(Constant)	2.999	.543		5.697	.000	
MI Knowledge	.069	.134	-.023	.071	.608	1.185
MI Attitudes	-.017	.064	-.004	-.037	.791	1.185

Summary

The first research question assessed what extent does clinicians' knowledge of MI, as measured by the adapted MIKAT, predict the likelihood of their use of the MI approach. The results of the bivariate regression indicated that MI knowledge was not a significant predictor of likelihood to use MI. The second research question asked to what extent does clinician' attitudes towards MI, as measured by the adapted MIKAT, predict the likelihood of their use of the MI approach. The results of the bivariate regression indicated that MI attitudes did not predict likelihood to use MI. The final research question asked whether MI knowledge and MI attitudes together could predict likelihood

to use MI. The results indicated that model was not significant as none of the independent variables was able to predict likelihood to use MI.

In the following chapter, there will be an overview of the research study, a summary of the findings, and interpretations. Additionally, recommendations are made about what further actions should be taken and proposed future research is suggested.

Chapter 5: Discussion, Conclusions, and Recommendation

Introduction

The purpose of this quantitative study was to examine whether clinicians' knowledge and attitudes about MI predicted their likelihood of using the MI approach. The participants of this study were clinicians who resided on the island of St. Croix, U.S. Virgin Islands and provided services to adolescents who exhibited acting out behavior. The study used a quantitative cross-sectional survey to collect data using a version of the Motivational Interviewing Knowledge and Attitudes Test (MIKAT) that I adapted. Research questions are discussed in Chapters 1, 3, and 4.

Summary of Key Findings

According to the results of this study, the relationship between the clinicians' knowledge and attitudes of clinicians about MI was not statistically significant. Thus, data analysis failed to reject the null hypothesis. Clinician knowledge of MI, as measured by the MIKAT knowledge scores, did not predict the likelihood of clinicians using MI with adolescents who exhibit acting out behavior in St. Croix, U.S. Virgin Islands. Additionally, RQ2 did not find a statistically significant relationship between clinicians' attitudes and use of MI. The null hypothesis was not rejected and clinician attitude toward MI as measured by MIKAT attitude scores did not predict the likelihood that clinicians who work with adolescents who exhibit acting out behaviors would use MI. For RQ3, when both attitude and knowledge were placed together to predict intention to

use MI, the data analysis also failed to reject the null hypothesis. The results indicated that knowledge and attitude were not statistically significant predictors of clinician intention to use MI. Clinicians' knowledge of, and attitude toward MI, as measured by the MIKAT knowledge and attitude scores, did not impact clinician intention to use MI.

Interpretation of the Findings

Findings from Literature Review

The literature review provided the background of this study. MI is an evidence-based intervention; it is based on a series of techniques (D'Amico et al., 2012; Jensen et al., 2011) and used with a variety of populations. The style and skill level of the clinician affect the wayMI is conducted with a client (Carpenter et al., 2012; L. Forsberg, L. G. Forsberg, Lindqvist, & Helgason, 2010; Miller & Rose, 2009). Adolescents who display anger, defiance, and opposition to treatment fit the profile of those who are well suited to respond favorably to MI interventions (LaChance, Ewing, Bryan, & Hutchison, 2009). While MI has been modified and further developed for use with adolescents, scientists continue to emphasize the need for continued research (Moyers, 2011). A primary aspect of research and intervention with MI and adolescents has been in the area of adolescent substance use (D'Amico et al., 2012, Jensen et al., 2011; Moyers, 2011; Naar-King, 2011). Researchers are continuing to ascertain the need for studies with adolescents and MI in other areas of behavioral change to determine the effectiveness of using MI with adolescents (American Psychological Association Presidential Task Force on Evidence-Based Practice, 2006; Jensen et al., 2011; Naar-King, 2011). There is a lack of research

on the potential of using MI with adolescents who exhibit acting-out behavior such as aggressiveness and hypersexualized behaviors. Furthermore, no research has been conducted to evaluate the impact of clinical knowledge and attitudes on their use of MI with adolescents.

In the present study, the mean score for MI knowledge was 3.04 (SD =1.19), where scores ranged from 1 to 5, where lower scores reflected less knowledge and higher scores represented greater knowledge. The mean score for likelihood to use MI was 2.97 (SD =1.01), where scores ranged from 1 (*not at all likely*) to 5 (*extremely likely*). Finally, the mean for MI attitudes was 8.92 (SD = 2.20), where scores ranged from 2 to 12. The version of the MIKAT used in this study focused on adolescents and was an adaption of the original MIKAT. Therefore, there are no norms for this version.

Interpretation of Findings and Theoretical Framework

The purpose of this study was to identify the current knowledge about and attitudes of clinicians toward MI by those clinicians who treat adolescents and to examine if these variables predict clinician use of MI with adolescents. The results of this study did not corroborate the hypothesis of the study as there was not a significant relationship between the knowledge of clinicians in predicting clinician use of MI with adolescents. Also, there was not a significant relationship between knowledge and attitudes of clinicians in predicting clinician use of MI with adolescents with acting-out behavior. Furthermore, there was not a significant relationship between clinician attitude and likelihood to use MI with adolescents.

SDT argues that individuals, such as clinicians, should feel competent, self-sufficient, and should build collaborative relationships with others (Deci & Ryan, 2012). The developers of SDT and the developers of MI have indicated that a relationship exists between SDT and MI as they complement each other. MI is a client-centered approach whereby clinicians should also feel competent, self-sufficient, and build collaborations with clients (Miller & Rollnick, 2002, 2009). For RQ1, SDT would predict that higher knowledge scores would be associated with higher likelihood to use MI scores. The results of RQ1 did not confirm the theory as knowledge of MI did not predict a likelihood to use MI. Based on SDT, it is expected that MI attitude scores would predict likelihood to use MI, where higher attitude scores would be associated with a greater likelihood to use MI. However, RQ2 did not confirm this theory as MI attitude was not a significant predictor of likelihood to use MI. Finally, based on SDT both knowledge and attitudes together are related to likelihood to use MI, however, this was not confirmed by the results of RQ3. The model containing MI knowledge and attitudes was not a significant predictor of likelihood to use MI. Overall, the study did not confirm what was expected based on SDT.

One possible reason why the study results did not conform to what was expected was the size of the effect of MI knowledge on Likelihood to use MI. When the power analysis was conducted to determine the needed sample size, a medium size effect was assumed, as this is the standard in social scientific research (Leedy & Ormrod, 2013). The results of the power analysis revealed that a minimum sample size of 68 was needed

for the study. A total of 73 respondents were included in the final analyses of the study. However, the results of the regression analyses, where MI knowledge was used to predict likelihood to use MI (RQ1), indicated that the effect of MI knowledge on likelihood to use MI was small (R^2=.001 or .1%). Based on Cohen's (1988) guidelines, an R^2 of .02 or 2% is small, .06 or 6% is medium, and .14 or 14% or higher is a large effect. A post-hoc power analysis, based on a sample size of 73, an effect size of .001, and a p-value of .05, produced an observed power of .047 or 4.7%, which is far below the 80% threshold used in the social sciences (Field, 2013; Leedy & Ormrod, 2013). This means that, based on the sample size of 73 and the small effect size (R^2=.001 or .1%), there was only a 4.7% chance of detecting a significant effect if one actually existed in the real world. The standard for likelihood of detectability is 80% (Field, 2013; Leedy & Ormrod, 2013). So, if MI knowledge is a significant predictor of likelihood to use MI, it is very unlikely that it would be detected in this study.

The effect of MI attitudes on likelihood to use MI was even smaller (R^2=.0001 or .01%). A post-hoc power analysis assuming a sample size of 73 and an effect size of R^2=.0001 or .01%, indicated that the statistical power was .039 or 3.9%. This indicated that there was only a 3.9% chance of detecting a significant predictive relationship between MI attitudes and likelihood to use MI, if one actually existed in the real world. Again, this is far below the accepted power threshold of .80 or 80% likelihood of detecting an effect.

Limitations of the Study

Three limitations were reviewed in Chapter 1 of this study. After the study was completed, 6 limitations were determined. First, the survey, an adapted version of the MIKAT, was used in this study. The initial concern was about the reliability of this adapted MIKAT questionnaire. A pilot study was conducted prior to the full study, and a Cronbach's alpha analysis was conducted. The results of the Cronbach's alpha indicated that the adapted MIKAT survey was reliable and thus no questions needed to be removed from the questionnaire.

A second concern about this study was nonresponse bias, whereby participants may not complete or return to the survey (Cresswell, 2014; Leedy et al., 2013). To overcome this limitation, respondents were sent two reminder e-mails. Additionally, prospective participants reportedly shared the information about the study to other colleagues via e-mail and verbally. Out of a possible 200 participants, 126 completed the survey and 73 were found eligible after completing screening questions. Therefore, nonresponse bias was not a limitation for this study. Dear (2014), Manthey (2013) and Leffingwell (2006) all had small samples for their studies using the MIKAT. Leffingwell's samples size was 76 and Dear's Sample size of pretest 74 were similar to my sample size of 73. Manthey sample size was 20. Manthey indicated the results of a very small sample size of 20 should be interpreted with caution.

A third limitation of this study was that the researcher was not present with participants while they completed the survey. If respondents come across questions that

are unclear, if there is no one there to answer the question, the respondent may answer the question inaccurately (Whitley & Kite, 2012). Therefore, participants were provided with contact information of the researcher to assist with responding to any questions. Three individuals contacted the researcher with questions. Two of those individuals requested the survey link be resent to them. The third individual requested information about MI and was provided with the website of www.motivationalinterviewing.org. Participants were informed that their responses were confidential and individually coded by Survey Monkey and could not be tracked by the researcher.

Social desirability is another potential limitation, where the respondent behaves in a way that they feel will support the hypothesis under investigation or reflect the respondent in a positive light (Whiteley & Kite, 2012). In this study, it may be that participants did not want to indicate lack of knowledge or poor attitude, so the scores may have been inflated due to social desirability.

As alluded to previously, the sample size, given the unexpectedly small effect sizes, was a limitation of the study. It was assumed that the effect of MI knowledge and MI attitudes would have a medium sized effect on likelihood to use MI. However, this was not the case. As a result, the study had no more than a 4% chance of detecting a significant predictive effect between MI knowledge and likelihood to use MI and MI attitudes and likelihood to use MI. In future studies, larger samples sizes will have to be used to evaluate the relationship between these variables.

Finally, another limitation is that the results of this study are specifically limited to clinicians who reside on the island of St. Croix who work with adolescents with acting-out behavior. The results of this study therefore cannot be generalized to any other population of clinicians. Various samples of clinicians from other areas may differ in their responses. This study was based strictly on understanding the findings based on the responses of clinicians on the island of St. Croix.

Recommendations

The study revealed that although clinicians had some MI knowledge of and positive attitudes toward MI, there was a low likelihood of using MI. One possible reason for this is that a high percentage of clinicians indicated that there was a lack of training in MI. 67.1 percent of clinicians who completed the survey reported a lack of formal training in MI. In the Virgin Islands, the closest MI trainers reside on the Island of Puerto Rico (www.motivationalinterviewing.org). The lack of available trainings may have impacted the likelihood of using MI in the future. Therefore, it is recommended that in future research, the likelihood of using MI should be assessed in the context of available trainings. The new likelihood question would be: how likely are you to use the MI approach if training was made available? This slight alteration to the question may reveal a significant relationship between MI knowledge, attitudes, and likelihood of using the MI approach in the future.

Implications

MI promotes a positive therapeutic alliance and collaborative relationship with the client through reflective listening, a major skill necessary to attain in developing one's therapy skills (Miller & Rollnick, 2002, 2009). As a result, MI is considered a client-centered approach. The opposite of the client-centered approach is an approach whereby the therapist chooses to be confrontational, directive, and less collaborative. This approach is not as effective for working with clients in a variety of settings (Gaume, Gmel, Faouzi, & Daeppen, 2009). There is a lack of normative data for the knowledge, attitude, and likelihood to use MI with adolescents with acting out behaviors because this study is based on an adaptation of the MIKAT that was not used in previous studies. Therefore, there is no reference point. The respondents of the study indicated that there was a lack of MI knowledge. With additional training, more practitioners may be more likely to learn about and utilize this client-centered approach. The widespread utilization of this approach could reduce the use of confrontational, directive, and less collaborative approaches in therapy. These approaches when utilized have been determined to be positive interventions with clients (Guame, Gmel, Faozi, Daeppen, 2009), thus potentially promoting positive social change. The results of this study may contribute to positive social change by contributing to the development of effective training for clinicians working with adolescents on St. Croix, where adolescent behavior is of great concern. This study potentially may demonstrate a need to increase knowledge of and

training in MI as a way to best help teens alter self-destructive behavior, and, thus possibly contribute to positive social change.

Methodological Implications

Assessing the impact of training on the relationship between the independent variables of knowledge and attitudes, and the dependent variable of likelihood to use MI, may be moderated by the need for MI training. For example if knowledge and positive attitudes are high and the need for training is low, then the likelihood to use MI may be high. However, if knowledge and positive attitudes about MI are high, but the need for MI training is high, then the likelihood of using MI may be low. It is therefore recommended that in future studies, the need for MI training be used as a moderator variable.

Conclusions

This study sought to examine whether knowledge and attitudes of MI were associated with the likelihood of using MI with adolescents with acting out behavior. The null hypotheses were that there was no relationship between knowledge of MI and likelihood of using MI, and attitudes about MI and the likelihood of using MI. In both instances, the null hypotheses were not rejected. Although the knowledge of and attitudes about MI were relatively high, there was no significant relationship to likelihood to use MI. This may be because respondents indicated that there was a lack of MI training available. It is therefore strongly recommended that in future research in this area, training in MI techniques should be included as a moderating variable to determine if it

impacts the relationship between knowledge and attitudes of MI and the likelihood to use MI with acting out adolescents.

References

Alexander, M., VanBenschoten, S. W., & Walters, S. C. (2008). Motivational interviewing: Training in criminal justice: Development of a model plan. *Federal Probation 72*(2), 61–66. Retrieved from http://www.uscourts.gov/uscourts/FederalCourts/PPS/Fedprob/200809/22_references.html

American Psychological Association Task Force on Evidence-Based Practice. (2006). Evidence-based practice in psychology. *American Psychologist, 61*, 271–285. doi:10.1037/0003-066X.61.4.271

Amrhein, P. C., Miller, W. R., Yahne, C. E., Palmer, M., & Fulcher, L. (2003). Client commitment language during motivational interviewing predicts drug use outcomes. *Journal of Consulting and Clinical Psychology, 71*, 862–878. doi:10.1037/0022-006X.71.5.862

Apodaca, T. R., Magil, M., Longabaugh, R., Jackson, K. M., & Monti, P. M. (2013). Effect of a significant other on client change talk in motivational interviewing. *Journal of Consulting and Psychology, 81*, 35–46. doi:10.1037/a0030881

Arkowitz, H., & Westra, H. A. (2009). Introduction to the special series on motivational interviewing and psychotherapy. *Journal of Clinical Psychology, 65*(11), 1149–1155. doi:10.1002/jclp.20640

Baer, J. S., Bleadnell, B., Garrett, S. B., Hartzler, B., Wells, E. A., & Peterson, P. L. (2008). Adolescent change language within a brief motivation intervention and

substance use outcomes. *Psychology of Addictive Behavior, 22*, 570–575. doi:10.1037/a0013022

Baker, A., Boggs, T. G., & Lewin, T. J. (2001). Randomized controlled trial of brief cognitive-behavioral interventions among regular users of amphetamine. *Addiction, 96*, 1279–1287. doi:10.1046/j.1360-0443.2001.96912797.x

Ball, S. A., Martino, S., Nich, C., Franforter, T. L., Van Horn, D., Crits-Christoph, P., . . . Carroll, K. M. (2007). Site matters: Multisite randomized trial of motivational enhancement therapy in community drug abuse clinics. *Journal of Consulting and Clinical Psychology, 75*, 556–567. doi:10.1037/0022-006X.75.4.556

Blackburn, J. (2013, June 21). Kids count report again reveals alarming data on well-being of children in V.I., but it also cites number of positive trends. *Virgin Islands Daily News.* Retrieved from http://virginislandsdailynews.com

Bolger, K., Carter, K., Curtin, L., Martz, D. M., Gagnon, S. G., & Michael, K. D. (2010). Motivational interviewing for smoking cessation among college students. *Journal of College Student Psychotherapy, 24*, 116–129. doi:10.1080/87568220903558661

Bombardier, C. H., & Rimmele, C. T. (1999). Motivational interviewing to prevent alcohol abuse after traumatic brain injury: A case series. *Rehabilitation Psychology, 44*, 52–67. doi:10.1037//0090-5550.44.1.52

Boneau, C. A. (1960). The effects of violations of assumptions underlying the t test. *Psychological Bulletin, 57*(1), 49-64.

Boston University School of Public Health. (2013). *The transtheoretical model (stages of change)*. Retrieved from http://sph.bu.edu/otlt/MPH-Modules/SB/SB721-Models/SB721-Models6.html

Bridgeland, J. M., DiIulio Jr, J. J., & Morison, K. B. (2006). The silent epidemic: Perspectives of high school dropouts. *Bill and Melinda Gates Foundation Report* Retrieved from ERIC database. (ED516739)

Brown, J., & Miller, W. R. (1993). Impact of motivational interviewing on participation and outcome in residential alcoholism treatment. *Psychology of Addictive Behavior, 7*(4), 211–218. doi:10.1037//0893-164X.7.4.211

Bryan, A. D., Schmiege, S. J., & Broaddus, M. R. (2009). HIV risk reduction among detained adolescents: A randomized, controlled trial. *Pediatrics, 124,* e1180–e1188.

Burke, B. L., Arkowitz, H., & Dunn, C. (2002). The efficacy of motivational interviewing and its adaptations: What we know so far. In W. R. Miller & S. Rollnick (Eds.), *Motivational interviewing: Preparing people for change* (pp. 217–250). New York: Guilford Press.

Burke, B. L., Arkowitz, H., & Menchola, M. (2003). The efficacy of motivational interviewing: A meta-analysis of controlled clinical trials. *Journal of Consulting and Clinical Psychology, 71*, 843–861. doi:10.1037/0022-006X.71.5.843

Butler, C., Rollnick, S., Cohen, D., Bachman, M., Russell, I., & Stott, N. (1999). Motivational consulting versus brief advice for smokers in general practice: A randomized trial. *British Journal of General Practice, 49*, 611–616.

Carpenter, K. M., Cheng, Y. T., Smith, J. L., Brooks, A. C., Amrhein, P. C., Wain, R. M., & Nunes, E. V. (2012). "Old dogs" and new skills: How clinician characteristics relate to motivational interviewing skills before, during, and after training. *Journal of Consulting and Clinical Psychology, 80*, 560–573. doi:10.1037/a0028362

Carroll, K. M., Farentinos, C., Ball, S. A., Crits-Christoph, P., Libby, B., Morgernstern, J., . . . Woody, G. E. (2002). MET meets the real world: Design issues and clinical strategies in the clinical trials network. *Journal of Substance Abuse Treatment, 23,* 73–80.

Carroll, K. M., Martino, S., Ball, S. A., Nich, C., Frankforter, T., Anez, . . . Farentinos, C. (2009). A multisite randomized effective trial of motivational enhancement therapy for Spanish-speaking substance users. *Journal of Consulting and Clinical Psychology, 77*, 993–999. doi:10.1037/a0016489

Chatzisarantis, N. L. D. & Hagger, M. S. (2009). Effects of an intervention based on self-determination theory on self-reported leisure-time physical activity participation. *Psychology and Health*, 24, 29-48. doi: 0.1080/08870440701809533

Colby, S. M., Monti, P. M., Barnett, N. P., Rosenhow, D. J., Weissman, K., Spirito, A., . . . Lewander, W. J. (1998). Brief motivational interviewing in a hospital setting for

adolescent smoking: A preliminary study. *Journal of Consulting and Clinical Psychology, 66*, 574–578. doi:10.1037//0022-006X.66.3.574

Cocks, K., & Torgerson, D. J. (2013). Sample size calculations for pilot randomized trials: a confidence interval approach. *Journal of Clinical Epidemiology*, *66*(2), 197-201.

Cohen, J. (1988). Statistical Power Analysis for the Behavioral *Sciences* (2nd ed.). Hillsdale, N.J.: Lawrence Erlbaum.

Connors, C. J., Walitzer, K. S., & Dermen, K. H. (2002). Preparing clients for alcoholism treatment: Effects on treatment participation and outcomes. *Journal of Consulting and Clinical Psychology, 70*(5), 1161–1169. doi:10.1037//0022-006X.70.5.1161

Corrigan, N., & Rusch, P. W. (2002). Motivational interviewing to improve insight and treatment adherence in schizophrenia. *Psychiatric Rehabilitation Journal, 26*, 23–32.

Crane, C. A., & Eckhardt, C. I. (2013). Evaluation of a single session brief motivational enhancement intervention for partner abusive men. *Journal of Counseling Psychology, 60*, 180–187. doi:10.1037/a0032178

Crits-Christoph, P., Gallop, R., Temes, C. M., Woody, G., Ball, S. A., Martino, S., & Carroll, K. M. (2009). The alliance in motivational interviewing enhancement therapy and counseling as usual for substance use problems. *Journal of Consulting and Clinical Psychology, 77*, 1125–1135. doi:10.1037/a0017045

Creswell, J. W. (2014). Research design: Quantitative, qualitative, and mixed methods approaches (2nd ed.). Thousand Oaks, CA: Sage.

D'Amico, E. J., Osilla, K. C., Miles, J. N. V., Ewing, B., Sullivan, K., & Katz, K. (2012). Assessing motivational interviewing integrity for group interventions with adolescents. *Psychology of Addictive Behavior*, *26,* 994–1000. doi:10.1037/a0027987

Dear, E.J.P. (2013). Evaluating motivational interviewing measures of knowledge and skill using training outcome data. (Unpublished Master's Thesis). Christchurch, New Zealand: University of Canterbury.

Deci, E. L., & Ryan, R. M. (2012). Self-determination theory in health care and its relation to motivational interviewing: A few comments. *International Journal of Behavioral Nutrition and Physical Activity, 9*(24), 1–6. doi:10.1186/1479-5868-9-24

Decker, S., Carroll, K. M., Nich, C., & Canning-Ball, C. M. (2013). Correspondence of motivational interviewing adherence and competence ratings in real and role-played client sessions. *Psychological Assessment, 25*, 306–312. doi:10.1037/a0030815

Dermen, K. H., & Thomas, S. N. (2011). Randomized controlled trial of brief interventions to reduce college students' drinking and risky sex. *Psychology of Addictive Behavior, 25*, 583–594. doi:0.1037/a0025472

DiClemente, C. C., Prochaska, J. O., Fairhurst, S. K., Velicer, W. F., Velasquez, M. M., & Rossi, J. S. (1991). The process of smoking cessation: an analysis of precontemplation, contemplation, and preparation stages of change. *Journal of Consulting and Clinical Psychology*, *59*(2), 295.

DiClemente, C. C. & Velasquez, M. W. (2002). Motivational interviewing and the stages of change. In W. R. Miller and S. Rollnick (Eds.), Motivational Interviewing: preparing people for change (2nd ed., pp. 217–250). New York: Guilford Press.

Donovan, D. M., Rosengren, D. B., Downey, L., Cox, G. C., & Sloan, K. L. (2001). Attrition prevention with individuals awaiting publicly funded drug treatment. *Addiction, 96*, 1149–1160. doi:10.1046/j.1360-0443.2001.96811498.x

Doran, N., Hohman, M., & Koutsenok, I. (2011). Linking basic and advanced motivational interviewing training outcomes for juvenile correctional staff in California. *Journal of Psychoactive Drugs, 7*, 19–26. doi:10.1080/02791072.2011.601986.

Dunn, E. C., Neighbors, C., & Larimer, M. E. (2006). Motivational enhancement therapy and self-help treatment for binge eaters. *Psychology of Addictive Behavior, 20*, 44–52. doi:10.1037/0893-164X.20.1.44

Egley Jr, A., & Ritz, C. E. (2006). Highlights of the 2004 National Youth Gang Survey. OJJDP Fact Sheet. FS-200601. Washington, DC: US Department of Justice, Office of Juvenile Justice and Delinquency prevention.

Erdfelder, E., Faul, F. & Buchner, A. (1996). G*POWER: A general power analysis program. *Behavior Research Methods, Instruments, & Computers, 28*, 1-11.

Feldstein, S., & Ginsburg, J. (2007). Sex, drugs, and rock 'n' rolling with resistance: Motivational interviewing in juvenile justice settings. In D. W. Springer & A. R. Robert (Eds.), *Handbook of forensic mental health with victims and offenders: Assessment, treatment, and research* (pp. 247–271). New York City, NY: Springer.

Field, A. P. (2012), Discovering statistics using SPSS. London, England : SAGE.

Forsberg, L., Forsberg, L. G., Lindqvist, H., & Helgason, A. R. (2010). Clinician acquisition and retention of motivational interviewing skills: a-two-and-a- half-year exploratory study. *Substance Abuse Treatment, Prevention, Policy, 5*(8), 1-14. doi: 10.1186/1747-597X-5-8.

Forsberg, L., Kallmen, H., Hermansson, U., Berman, L. H., & Helgason, A. R. (2007). Coding counsellor behavior in motivational interviewing sessions: Inter-rater reliability for the Swedish motivational interviewing treatment integrity code (MITI). *Cognitive Behavior Therapy, 36*(3), 162–169. doi:10.1080/16506070701339887

Fox, C. L., Towe, S. L., Stephens, R. S., Walker, D. D., & Roffman, R. A. (2011). Motives for cannabis use in high risk cannabis users. *Psychology of Addictive Behavior*, *25,* 492–500. doi:10.1037/a0024331

Gaume, J., Gmel, G., Faouzi, M., & Daeppen, J. B. (2009). Counselor skill influences outcomes of brief motivational interventions. *Journal of Substance Abuse Treatment, 37*, 151–159. doi:10.1016/j.jsat.2008.12.001

Gemignani, R. J. (1994). Juvenile correctional education: A time for change. OJJDP Update on Research. Washington, DC: US Department of Justice, Office of Juvenile Justice and Delinquency Prevention.

Gibbons, C. J., Carroll, K. M., Ball, S. A., Nich, C., Frankforter, T. L., & Martino, S. (2010). Community program therapist adherence and competence in motivational interviewing assessment intake session. *The American Journal of Drug and Alcohol Abuse, 36*, 342–349. doi:10.3109/00952990.2010.500437

Gilder, D. A., Luna, J. A., Calac, D., Moore, R. S., Monti, P. M., & Ehlers, C. L. (2011). Acceptability of the use of motivational interviewing to reduce underage drinking in a Native American community. *Substance Use and Misuse, 46*, 836–842. doi:10.3109/10826084.2010.541963

Guerin, E., Bales, E., Sweet, S., & Fortier, M. (2012). A meta-analysis of the influence of gender on self-determination theory's motivational regulation for physical activity. *Canadian Psychology*, *53*(4), 291-300. doi:10.1037/a0030215

Hardcastle, S., Blake, N., & Hagger, S. (2012). The effectiveness of motivational interviewing primary-care based intervention on physical activity and predictors of change in a disadvantaged community. *Journal of Behavioral Medicine, 35,* 318–333. doi: 10.1007/s10865-012-9417-1

Harris, R. S., Aldea, M. A., & Kirkley, D. E. (2006). A motivational interviewing and common factors approach to change in working with alcohol use and abuse in college students. *Professional Psychology: Research and Practice, 37*, 614–621. doi:10.1037/07357028.37.6.614

Hettema, J., & Hendricks, P. S. (2010). Motivational interviewing for smoking cessation: A meta-analytic review. *Journal of Consulting and Clinical Psychology, 78*, 868–884. doi:10.1037/a0021498

Hettema, J., Steele, J., & Miller, W. R. (2005). Motivational interviewing. *Annual Review of Clinical Psychology, 1*, 91−111. doi:10.1146/annurev.clinpsy.1.102803.143833

Higa-McMillan, C. K., Powell, C. K., Daleiden, E. L., & Mueller, C. W. (2011). Pursuing an evidence-based culture through contextualized feedback: Aligning youth outcomes and practices. *Professional Psychology: Research and Practice, 42*(2), 137–144.

Hodgins, D. C., Ching, L. E., & McEwin, J. (2009). Strength of commitment language in motivational interviewing and gambling outcomes. *Psychology of Addictive Behavior, 23*, 122–130. doi:10.1037/a0013010

Hodgins, D. C., Currie, S. R., & el-Guebaly, N. (2001). Motivational enhancement and self-help treatments for problem gambling. *Journal of Consulting and Clinical Psychology, 69*, 50–57. doi:10.1037//0022-006X.69.1.50

Hohman, M., Doran, N., & Koutsenok, I. (2009). Motivational interviewing training for juvenile correction staff in California: One year initial outcomes. *Journal of Offender Rehabilitation, 48*, 635–648. doi:10.1080/10509670903196108

Houck, J. M., Moyers, T. B., & Tesche, C. D. (2012). Through a glass darkly: Some insights on change talk via magnetoencephalography. *Psychology of Addictive Behavior, 27*, 489–500. doi:10.1037/a0029896

Interian, A., Martinez, I., Rios, L. I., Krejci, J., & Guarnaccia, P. J. (2010). Adaptation of a motivational interviewing intervention to improve antidepressant adherence among Latinos. *Cultural Diversity and Ethnic Minority Psychology, 16*, 215–225. doi:10.1037/a0016072

Irby, M., Kaplan, S., Garner-Edwards, D., Kolbash, S., & Skelton, J. (2010). Motivational interviewing in a family-based pediatric obesity program: A case study. *Family Systems and Health, 28,* 236–246. doi:10.1037/a0020101

Jensen, C. D., Cushing, C. C., Aylward, B. S., Craig, J. T., Sorell, D. M., & Steele, R. G. (2011). Effectiveness of motivational interviewing interventions for adolescent substance abuse behavior change: A meta-analytic review. *Journal of Consulting and Clinical Psychology, 79*, 433–440. doi:10.1037/a0023992

Kafka, M. P. (2010). Hypersexual disorder: A proposed diagnosis for DSM-V. *Archives of Sexual Behavior, 39,* 377–400. doi: 10.1007/s10508-009-9574-7

Kleinpeter, C., Koob, J. J., & Chambers, R. (2011). Motivational interviewing training

for probation officers in California. *The International Journal of Learning, 18*(2), 191–121.

LaChance, H., Ewing, S. W. F., Bryan, A. D., & Hutchison, K. E. (2009). What makes group MET work? A randomized controlled trial of college student drinkers in mandated alcohol diversion. *Psychology of Addictive Behavior, 23*, 598–612. doi:10.1037/a0016633

Lee, C. S., Lopez, S. R., Hernandez, L., Colby, S. M., Caetano, R., Borrelli, B., & Roshenow, D. (2011). A cultural adaption of motivational interviewing to address heavy drinking among Hispanics. *Cultural Diversity and Ethnic Minority Psychology, 17*(3), 317–324. doi:10.1037/a0024035

Leedy, Paul D. & Ormrod, Jeanne E. (2013), *Practical research: Planning and design,* (10th ed.). Upper Saddle River, NJ.: Pearson Education.

Leffingwell, T. R. (2006). Motivational Interviewing Knowledge and Attitudes Test (MIKAT) for evaluation of training outcomes. *MINUET, 13,* 10-11.

Liu, J. (2004). Childhood externalizing behavior: theory and implications. *Journal of Child and Adolescent Psychiatric Nursing17*(3), 93–103.

Lundahl, B. W., & Burke, B. (2009). The effectiveness and applicability of Motivational Interviewing: A practice-friendly review of four meta-analysis. *Journal of Clinical Psychology, 65*(11), 1232-1245. doi: 10.1002/jclp.20638

Lundahl, B. W., Tollefson, D., Kunz, C., Brownell, C., & Burke, B. (2010). Meta-analysis of motivational interviewing: Twenty-five years of research. *Research on Social Work Practice, 20*, 137–160. doi:10.1177/1049731509347850

Madson, M. B., Campbell, T. C., Barrett, D. E., Brondino, M. J., & Melchert, T. P. (2005). Development of the motivational interviewing supervision and training scale. *Psychology of Addictive Behavior, 19*, 303–310. doi:10.1037/0893-164X.19.3.303

Madson, M. B., Loignon, A. C., & Lane, C. (2009). Training in motivational interviewing: A systematic review. *Journal of Substance Abuse Treatment, 36*, 101–109. doi:10.1016/j.jsat.2008.05.005

Magill, M., Stout, R. L., & Apodaca, T. R. (2012). Therapist focus on ambivalence and commitment: A longitudinal analysis of motivational interviewing treatment ingredients. *Psychology of Addictive Behaviors, 27* (3): 754-762. doi:10.1037/a0029639

Manthey, T.J. (2013). A pilot study of introductory motivational interviewing training for supported employment case managers. *International Journal of Psychosocial Rehabilitation, 18* (1), 133-138.

Markland, D., Ryan, R., Tobin, V., & Rollnick, S. (2005). Motivational interviewing and self-determination theory. *Journal of Social and Clinical Psychology, 24*, 811–831. doi:10.1521/jscp.2005.24.6.811

Martin, T., Christopher, P. J., Houck, J. M., & Moyer, T. B. (2011). The structure of client language and drinking outcomes in Project MATCH. *Psychology of Addictive Behavior, 25*, 439–445. doi:10.1037/a0023129

Martino, S., Ball, S. A., Nich, C., Frankforter, T. L., & Carroll, K. M. (2008). Community program therapist adherence and competence in motivational enhancement therapy. *Drug and Alcohol Dependency, 97*, 37–48. doi:10.1016/j.drugalcdep.2008.01.020

McConnaughy, E. A., DiClemente, C. C., Prochaska, J. O., & Velicer, W. F. (1989). Stages of change in psychotherapy: A follow-up report. *Psychotherapy: Theory, Research, Practice, Training*, *26*(4), 494.

McMurran, M. (2009). Motivational interviewing with offenders: A systemic review. *Legal and Criminology Psychology, 14*, 83–100. doi:10.1348/135532508X278326

Michael, K. D., Curtin, L., Kirkley, D. E., Jones, D. L., & Harris, R. (2006). Group-based motivational interviewing for alcohol use among college students: An exploratory study. *Professional Psychology: Research and Practice, 37*, 629–634. doi:10.1037/0735-7028.37.6.629

Miller, W. R. (1999). Toward a theory of motivational interviewing. *Motivational Interviewing Newsletter: Updates, Education and Training, 6*, 2–4. doi:10.1037/a0016830

Miller, W. R., & Moyers, T. B. (2006). Eight stages in learning motivational interviewing. *Journal of Teaching in the Addictions 5*, 3–17. doi:10.1300/J188v05n01_02

Miller, W. R., Moyers, T. B., Amrhein, P., & Rollnick, S. (2006). A consensus statement on defining change talk. *MINT Bulletin, 13*(2), 6–7.

Miller, W. R., & Rollnick, S. (1995). What is motivational interviewing? *Behavioral and Cognitive Psychotherapy, 23*, 325–334. Retrieved from http://www.motivationalinterview.net/clinical/whatismi.html

Miller, W. R., & Rollnick, S. (1991). Motivational interviewing: preparing people to change addictive behavior. Guilford Press. *New York*.

Miller, W. R., & Rollnick, S. (2002). *Motivational interviewing: Preparing people for change* (2nd ed.). New York City, NY: Guilford Press.

Miller, W. R., & Rollnick, S. (2009). Ten things that motivational interviewing is not. *Behavioural and Cognitive Psychotherapy, 37,* 129–140. doi:10.1017/S1352465809005128

Miller, W. R., & Rollnick, S. (2012). Meeting in the middle: Motivational interviewing and self-determination theory. *International Journal of Behavioral Nutrition and Physical Activity, 9*, 25. doi:10.1186/1479-5868-9-25

Miller, W. R., & Rose, G. S. (2009). Toward a theory of motivational interviewing. *American Psychologist, 64*, 527–537. doi:10.1037/a0016830

Miller, W. R., & Rose, G. S. (2010). Motivational interviewing in relational context. *American Psychologist, 65*, 298–299. doi:10.1037/a0019487

Miller, W. R., Sorensen, J. L., Selzer, J. A., & Bringham, G. S. (2006). Disseminating evidence based practices in substance abuse treatment: A review with suggestions. *Journal of Substance Abuse Treatment, 31*, 25–39. doi:10.1016/j.jsat.2006.03.005

Miller, W. R., Villanueva, M., Tonigan, J. S., & Cuzmar, I. (2008). Are special treatments needed for special populations? *Alcoholism Treatment Quarterly, 25*, 63–78. doi:10.1300/J020v25n04_05

Miller, W. R., Yahne, C. E., Moyers, T. B., Martinez, J., & Pirritano, M. (2004). A randomized trial of methods to help clinicians learn motivational interviewing. *Journal of Consulting and Clinical Psychology 72*, 1050–1062. doi:10.1037/0022-006X.72.6.1050

Mitcheson, L., Bhavsar, K., & McCambridge, J. (2009). Perfection takes time: Motivational interviewing cannot be mastered with limited training and practice. *Clinicians Research Digest, 27*(11), 4.

Monti, P. M., Colby, S. M., Barnett, N. P., Spirito, A., Rohsenow, D. J., Myers, M., Woolard, R., & Lewander, W. (1999). Brief intervention for harm reduction with alcohol-positive older adolescents in a hospital emergency department. *Journal of Consulting and Clinical Psychology, 67*(6), 989–994. doi:10.1037//0022-006X.67.6.989

Morgenstern, J., Kuerbis, A., Amrhein, P., Hail, L., Lynch, K., & McKay, J. R. (2012). Motivational interviewing: A pilot test of active ingredients and mechanisms of change. *Psychology of Addictive Behavior, 26*, 859–869. doi:10.1037/a0029674

Moyers, T. B. (2011). Disseminating motivational interviewing in psychiatric and adolescent populations: Optimism and a few worries. *Canadian Journal of Psychiatry, 56*(11), 641–642.

Moyers, T. B., & Martin, T. (2006). Therapist influence on client language during motivational interviewing sessions. *Journal of Substance Abuse Treatment, 30*, 245–251. doi:10.1016/j.jsat.2005.12.003

Moyers, T. B., Martin, T., Christopher, P. J., Houck, J. M., Tonigan, J. S., & Amrhein, P. C. (2007). Client language as a mediator of motivational interviewing efficacy: Where is the evidence? *Alcoholism: Clinical and Experimental Research, 31*(Suppl. 3), 40S–47S. doi:10.1111/j.1530-0277.2007.00492.x

Moyers, T. B., Martin, T., Houck, J. M., Christopher, P. J., & Tonigan, J. C. (2009). From in-session behavior to drinking outcomes: A causal chain for motivational interviewing. *Journal of Consulting and Clinical Psychology, 77*, 1113–1124. doi:10.1037/a0017189

Moyers, T. B., Miller, W. R., & Hendrickson, Stacey, M. L. (2005). How does motivational interviewing work? Therapist interpersonal skill predicts client involvement within motivational interviewing sessions. *Journal of Consulting and Clinical Psychology, 73*, 590–598. doi:10.1037/0022-006X.73.4.590

Murphy, R. T., Thompson, K. E., Murray, M., Rainey, Q., & Uddo, M. M. (2009). Effect of a motivation enhancement intervention on veterans' engagement in PTSD treatment. *Psychological Services, 6*, 264–278. doi:10.1037/a0017577

Musser, P. H., & Murphy, C. M. (2009). Motivational interviewing with perpetrators of intimate partner abuse. *Journal of Clinical Psychology: In Session, 65*, 1218–1231. doi:10.1002/jclp.20642

Naar-King, S. (2011). Motivational interviewing in adolescent treatment. *The Canadian Journal of Psychiatry, 56*(11), 651–656. doi:10.1080/09540120802612824

Naar-King, S., Wright, K., Parsons, J. T., Frey, M., Templin, T., Lam, P., & Murphy, D. (2006). Healthy choices: Motivational enhancement therapy for health risk behavior in HIV-positive youth. *AIDS Education and Prevention, 18*, 1–11. doi:10.1521/aeap.2006.18.1.1

National Institute on Drug Abuse. (2012). What are the unique needs of adolescents with substance abuse addiction? In National Institute on Drug Abuse, *Principles of drug addiction treatment: A research based guide* (3rd ed., p. 22). Rockville, MD. Retrieved from http://www.drugabuse.gov/publications/principles-drug-addiction-treatment-research-based-guide-third-edition/frequently-asked-questions/what-are-unique-needs-adolescents-substance

Nelson, T. D., & Nelson, J. M. (2010). Evidence-based practice and the culture of adolescence. *Professional Psychology: Practice and Research, 41*(4), 305–311. doi:10.1037/a0020328

Norcross, J. C., Krebs, P. M., & Prochaska, P. O. (2011). Stages of change. *Journal of Clinical Psychology, 67*(2), 143–154. doi:10.1002/jclp.20758

Nunnaly, J. C., & Bernstein, I. H. (1994). *Psychometric theory*. Sydney: McGraw-Hill.

Olsen, S., Smith, S. S., Oei, T. P. S., & Douglas, J. (2012). Motivational interviewing (MINT) improves continuous positive airway pressure (CPAP) acceptance and adherence: A randomized controlled trial. *Journal of Consulting and Clinical Psychology*, *80,* 151–163. doi:10.1037/a0026302

OJDDP Statistical Briefing Book (2014). Juvenile Arrest Rate Trends [Figure]. Retrieved from http://www.ojjdp.gov/ojstatbb/crime/JAR_Display.asp?ID=qa05212

Pallant, J. (2013). *SPSS survival manual: A step by step guide to data analysis using SPSS* (5th ed.). Maidenhead: Open University Press/McGraw-Hill.

Peterson, P. L., Baer, J. S., Wells, E. A., Ginzler, J. A., & Garrett, S. B. (2006). Short-term effects of a brief motivational intervention to reduce alcohol among homeless adolescents. *Psychology of Addictive Behavior, 20*, 254–264. doi:10.1037/0893-164X.20.3.254

Peress, M. (2010). Correcting for survey nonresponse using variable response propensity. *Journal of the American Statistical Association, 105*(492), 1418-1430. doi: 10.1198/jasa.2010.ap09485

Poirier, M. K., Clark, M. M., Cerhan, J. H., Pruthi, S., Geda, Y. E., & Dale, L. C. (2004).

Teaching motivational interviewing to first-year medical students to improve counseling skills in health behavior change. *Mayo Clinic Proceedings, 79*(3), 327–331.

Prochaska, J. O. & DiClemente, D. C. (1984). *The transtheoretical approach: Crossing traditional boundaries of therapy.* Homewood, IL: Dow Jones Irwin.

Prochaska, J. O. & DiClemente, C. C. (1986). Towards a comprehensive model of change. In W. R. Miller & N. Heather (Eds.), *Treating addictive behaviors: Processes of change* (pp. 3-27). New York, NY: Plenum Press.

Prochaska, J.O., DiClemente, C. C., & Norcross, J. (1992). In search of how people change. *American Psychologist, 47*, 1102–1114.

Prochaska, J. O., Velicer, W. F., Rossi, J. S., Goldstein, M. G., Marcus, B. H., Rakowski, W., ... & Rossi, S. R. (1994). Stages of change and decisional balance for 12 problem behaviors. *Health Psychology*, *13*(1), 39.

Project MATCH Research Group. (1997). Matching alcoholism treatments to client heterogeneity: Project MATCH posttreatment drinking outcomes. *Journal of Studies on Alcohol, 58*, 7–29.

Project MATCH Research Group. (1998). Matching alcoholism treatments to client heterogeneity: Project MATCH three-year drinking outcomes. *Alcoholism: Clinical and Experimental Research, 22*, 1300–1311.

Reniscow, K., Davis, R. E., Zhang, G., Konkel, J., Strecher, V. J., Shaikh, A. R., Tolsma, J., . . . Weise, C. (2008). Tailoring a fruit and vegetable intervention on novel

motivational constructs: Results of a randomized study. *Annals of Behavioral Medicine, 35,* 159–169. doi: 10.1007/s12160-008-9028-9

Resnicow, K., DiIorio, C., Soet, J. E., Borrelli, B., Hecht, J., & Ernst, D. (2002). Motivational interviewing in health promotion: It sounds like something is changing. *Health Psychology, 21*(5), 444–451. doi:10.1002/9780470979952.ch25

Resnicow, K., Jackson, A., Blissett, D., Wang, T., McCarty, F., Rohotep, S., & Periasamy, S. (2005). Results of the Healthy Body Healthy Spirit trial. *Health Psychology, 24*, 339–348. doi:10.1037/0278-6133.24.4.339

Resnicow, K., Jackson, A., Wang, T., Dudley, W., & Baranowski, T. (2001). A motivational interviewing intervention to increase fruit and vegetable intake through Black churches: Results of the Eat for Life trial. *American Journal of Public Health, 91*, 1686–1693. doi:10.2105/AJPH.91.10.1686

Rogers, C. R. (1949). The attitudes and orientation of the counselor in client-centered therapy. *Journal of Consulting Psychology*, *13*(2), 82.

Rollnick, S., Butler, C. C., & Stott, N. (1997). Helping smokers make decisions: The enhancement of brief intervention for general medical practice. *Patient Education and Counseling, 31*, 191–203. doi:10.1016/S0738-3991(97)01004-5

Rollnick, S., Miller, W. R., & Butler, C. C. (2008). *Motivational interviewing in health care: Helping patients change behavior*. New York City: Guilford Press.

Rosengard, C., Stein, L. A. R., Barnett, N. P., Monti, P. M., Golembeske, C., Lebeau-Craven, R., & Miranda, R. (2007). Randomized clinical trial of motivational

enhancement of substance use treatment among incarcerated adolescents: Post-release condom non-use. *Journal of HIV/AIDS Prevention in Children & Youth, 8*, 45–64. doi:10.1300/J499v08n02_04

Rosnow, R. L. & Rosendal, R. (1989). Statistical procedures and the justification of knowledge in the psychological science. *American Psychologist, 44*(10), 1276-1284.

Rubel, E. C., Sobell, L. C., & Miller, W. R. (2000). Do continuing education workshops improve participants' skills? Effects of a motivational interviewing workshop on substance-abuse counselors' skills and knowledge. *The Behavior Therapist, 23*(4), 73–77, 90.

Santa Ana, E. J., Wulfert, E., & Nietert, P. J. (2007). Efficacy of group motivational interviewing (GMI) for psychiatric inpatients with chemical dependence. *Journal of Consulting and Clinical Psychology, 75*, 816–822. doi:10.1037/0022-006X.75.5.816

Schmider, E., Ziegler, M., Danay, E., Beyer, L., & Buhner, M (2010). Is it really robust? Reinvestigating the robustness of ANOVA against violations of the normal distribution assumption. Methodology. *European Journal of Research Methods for the Behavioral and Social Sciences, 6*, 147-151.

Self-Determination Theory. (2013). *Self-determination theory: An approach to human motivation & personality*. Retrieved from http://www.selfdeterminationtheory.org/

Sinha, R., Easton, C., & Kemp, K. (2003). Substance abuse treatment characteristics of probation-referred young adults in a community-based outpatient program. *American Journal of Drug and Alcohol Abuse, 29*, 585–597. doi:10.1081/ADA-120023460

Slagle, D. M., & Gray, M. J. (2007). The utility of motivational interviewing as an adjunct to exposure therapy in the treatment of anxiety disorders. *Professional Psychology: Research and Practice, 38*, 329–337. doi:10.1037/0735-7028.38.4.329

Slavet, J. D., Stein, L. A. R., Klein, J. L., Colbi, S. M., Barnett, N. P., & Monti, P. M. (2005). Piloting the family check-up with incarcerated adolescents and their parents. *Psychological Services, 2*, 123–132. doi:10.1037/1541-1559.2.2.123

Smedslund, G., Berg, R. C., Hammerstrom, K. T., Steiro, A., Leiknes, K. A., Dahl, H. M., & Karlsen, K. (2011). Motivational interviewing for substance abuse. *Cochrane Database of Systematic Reviews, 5*, 1–128. doi:10.1002/14651858.CD008063

Smith, J. L., Carpenter, K. M., Amrhein, P. C., Brooks, A. C., Levin, D., Schrieber, E. A., . . . Nunes, E. V. (2012). Training substance abuse clinicians in motivational interviewing using live supervision via teleconferencing. *Journal of Consulting and Clinical Psychology, 80*, 450–464. doi:10.1037/a0028176

Sobell, L. C., Manor, H. L., Sobell, M. B., & Dum, M. (2008). Self-critiques of audiotaped therapy sessions: A motivational procedure for facilitating feedback

during motivation. *Training and Education in Professional Psychology, 2*, 151–155. doi:10.1037/1931-3918.2.3.151

Sobell, L. C., Sobell, M. B., & Agrawall, S. (2009). Randomized controlled trial of a cognitive-behavioral motivational intervention in a group versus individual format in substance use disorders. *Psychology of Addictive Behavior, 23*, 672–683. doi:10.1037/a0016636

Stahl, A. L. (2008). Petitioned status offense cases in juvenile courts, 2004. *OJJDP Fact Sheet*, *2*, 1-2.

Stein, L. A. R., Colby, S. M., Barnett, N. P., Monti, P. M., Golembeske, C., Labeau-Craven, R., & Miranda, R. (2006). Enhancing substance abuse engagement in incarcerated adolescents. *Psychological Services, 3*, 25–34. doi:10.1037/1541-1559.3.1.0

Stephens, R. S., Roffman, R. A., & Curtin, L. (2000). Comparison of extended versus brief treatments for marijuana use. *Journal of Consulting and Clinical Psychology, 68*, 898–908. doi:10.1037/0022-006X.68.5.89

Stotts, A. M., Schmitz, J. M., Rhoades, H. M., & Grabowski, J. (2001). Motivational interviewing with cocaine-dependent patients: A pilot study. *Journal of Consulting and Clinical Psychology, 69*, 858–862.

Suresh, K. P., & Chandrashekara, S. (2012). Sample size estimation and power analysis for clinical research studies. *Journal of Human Reproductive Sciences*, *5*(1), 7.

Tabachnick, B.G., & Fidell, L.S. (2012). *Using multivariate* statistics (6th ed.). Boston: Pearson Education.

Thush, C., Weirs, R. W., Moerbeek, M., Ames, S. L., Grenard, J. L., Sussman, S., & Stacey, A. W. (2009). Influence of motivational interviewing on explicit and implicit alcohol-related cognition and alcohol use in at-risk adolescents. *Psychology on Addictive Behavior, 23*, 146–151. doi:10.1037/a0013789

Traub, R.E. (1994*). Reliability for the Social Sciences: Theory and Applications.* Thousand Oaks CA: Sage.

Trepanier, S., Fernet, C., & Austin, S. (2012). Social and motivational antecedents of perceptions of transformational leadership: A self-etermination theory perspective. *Canadian Journal of Behavioral Science*, *44*(4), 272-277. doi:10.1037/a0028699

Vader, A. M., Walters, S. T., Prabhu, G. C., Houck, J. M., & Field, C. A. (2010). The language of motivational interviewing and feedback: Counselor language, client language, and client drinking outcomes. *Psychology of Addictive Behavior, 24*, 190–197. doi:10.1037/a0018749

van de Mortel, T.F. (2008). Faking it: Social desirability response bias in self report research. *Australian Journal of Advanced Nursing*. 25(4), 40-48. Retrieved from http://epubs.scu.edu.au/cgi/viewcontent.cgi?article=1001&context=hahs_pubs

Wagner, C. C., & Ingersoll, K. S. (2008). Beyond cognition: Broadening the emotional base of motivational interviewing. *Journal of Psychotherapy Integration, 18*, 191–206. doi:10.1037/1053-0479.18.2.191

Walters, S. T., Vader, A. M., Nguyen, N., Harris, T. R., & Eells, J. (2010). Motivational interviewing as a supervision strategy in probation: A randomized effectiveness trial. *Journal of Offender Rehabilitation, 49*, 309–323. doi:10.1080/10509674.2010.489455

Wilcox, R. R. (2001). *Fundamental of modern statistical methods: Substantially increasing power and accuracy*. New York: Springer.

William R. Miller (1983). Motivational interviewing with problem drinkers. *Behavioural Psychotherapy, 11*, 147-172. doi:10.1017/S0141347300006583.

Woodall, W. G., Delaney, H. D., Kunitz, S. J., Westerberg, V. S., & Zhao, H. (2007). A randomized trial of a DWI intervention program for first offenders: Intervention outcomes and interactions with antisocial personality disorder among a primarily American-Indian sample. *Alcoholism: Clinical and Experimental Research, 31*, 974–987. doi:10.1111/j.1530-0277.2007.00380.x

Young, T. L., & Hagehorn, W. B. (2012). The effect of a brief training in motivational interviewing on trainee skill development. *Counselor Education and Supervision, 51*(2), 82–97. doi:10.1002/j.1556-6978.2012.00006.x

Appendix A: Screening Questions

1. Informed Consent
   By clicking this button you have read the consent form above and agree to participate in this study.

2. Do you provide services to teenagers with acting-out behavior such as verbal aggression, physical aggression, running away, or excessive sexual behavior without concern of risk to self or others.

3. What is you level of education?

4. Have you previously participated in this study?

Appendix B: Original MI Quiz By Dr. Leffingwell

MOTIVATIONAL INTERVIEWING QUIZ

The following statements are either factually true or false, or consistent with ("true") or inconsistent with ("false") a motivational interviewing approach. Indicate your response by circling the appropriate item to the right.

1. Substance users must accept their problem (for example: "I am an alcoholic/addict.") before they can get help. True False

2. Denial is a characteristic of the disease of addiction. True False

3. Therapists' expectancies for their client's abilities to change have no effect upon whether change occurs. True False

4. Research has failed to find support the existence of an "addictive personality." True False

5. Substance users need to "hit bottom" before they can change. True False

6. If clients are resistant to talk about changing substance use, direct confrontation and persuasion are required to help the person change. True False

7. Resistance to talking about substance use is the direct result of denial, a symptom of the disease of addiction. True False

8. Counselors should emphasize personal choice over clients' behavior, including substance use. True False

9. Substance abusers are generally incapable of making sound decisions in their current state of addiction. True False

10. Resistance is best thought of as a product of the interpersonal context in which it is observed. True False

11. Addicts and alcoholics are not capable of exerting control over their substance use behavior. True False

12. Readiness to make change is the client's responsibility – no one can help them until they decide they are ready. True False

13. The best way to motivate substance users is to help them resolve their

ambivalence about change. True False

14. External pressure and consequences is the only way to make substance abusers change. True False

15. Which of the following are principles of a Motivational Interviewing approach to dealing with substance use?

(select all that apply):

□ Breakdown denial □ Develop discrepancies □ Confront resistance

□ Express empathy □ Acceptance of label("alcoholic/addict") is required □ Educate about risks

□ Maximize external pressure □ Use subtle coercion □ Support self-efficacy

□ Roll with resistance □ Give direct advice □ Give clear consequences

□ Require abstinence as only acceptable goal □ Encourage submission to disease

□ Avoid argumentation

Appendix C: Adapted MI Survey By Dr. Leffingwell

Hello. Thank you for agreeing to participate in this study. This study is totally confidential. No personally identifiable information is being collected. Today we are conducting a survey on motivational interviewing. Your feedback is very important to us. This survey should take about 5 minutes to complete.

The following statements are either factually true or false, or consistent with (true) or inconsistent with (false) a motivational interviewing approach. Indicate your response by circling the appropriate item to the right.

1. Teenagers with acting-out behavior must accept their problems (for example: "I am a teenager with problem behavior") before they can get help. True False

2. Denial is a characteristic of teenagers with acting-out behavior. True False

3. Therapists' expectancies for their clients' abilities to change have no effect on whether change occurs. True False

4. Research has failed to find support the existence of an "addictive personality." True False

5. Teenagers with acting-out behavior need to "hit bottom" before they can change. True False

6. If teenage clients are resistant to talk about changing acting-out behavior, direct confrontation and persuasion are required to help the person change. True False

7. Resistance to talking about acting-out behavior is the direct result of denial. True False

8. Counselors should emphasize personal choice over clients' behavior, including acting-out behavior. True False

9. Teenagers with acting-out behavior are generally incapable of making healthy decisions.
True False

10. Resistance is best thought of as a product of the interpersonal context in which it is observed. True False

11. Teenagers with acting-out behavior are not capable of exerting control over their

behavior problems. True False

12. Readiness to make change is the clients' responsibility; no one can help them change until they decide they are ready to change. True False

13. The best way to motivate teenagers with acting-out behavior is to help them resolve their ambivalence about change. True False

14. External pressure and consequences are the only way to make teenagers with acting-out behavior change. True False

15. Which of the following are principles of a Motivational Interviewing approach to dealing with acting-out behavior?

(select all that apply):

□ Breakdown denial □ Develop discrepancies □ Confront resistance

□ Express empathy □ Acceptance of label("acting-out behavior") is required □ Educate about risks

□ Maximize external pressure □ Use subtle coercion □ Support self-efficacy

□ Roll with resistance □ Give direct advice □ Give clear consequences

□ Require abstinence as only acceptable goal □ Encourage submission to behavior

□ Avoid argumentation

16. How likely are you to use the MI approach with adolescents who exhibit aggressive and hypersexualized behaviors? Please use a scale of 1 to 5, where 1 is not at all likely and 5 is extremely likely

17. Have you attended any training in Motivational Interviewing? Yes No

18. Have you used the MI approach with clients? Yes No

Appendix D: Answer Key for Appendix C: Adapted MI Survey By Dr. Leffingwell

1. False
2. False
3. False
4. True
5. False
6. False
7. False
8. True
9. False
10. True
11. False
12. False
13. True
14. False
15. Express empathy, Roll with resistance, Develop discrepancies, Support self-efficacy, Avoid argumentation

A. Five Prescribed responses: Express empathy, Roll with resistance, Develop discrepancies, Support self-efficacy, Avoid argumentation
B. Seven Proscribed Reponses: Use subtle Coercion, Give direct advice, Give clear consequences, Require abstinence as only acceptable goal, Encourage submission to behavior, Break down denial, Maximize external pressure,
C. Three Neutral Responses: Educate about risks, Confront Resistance, Acceptance of label acting-out behavior

Appendix E: Additional Questionnaire

Please circle your response

1. Highest Education Experience

Bachelors Masters Specialist Doctoral

2. Years of experience in your field (counseling, psychology, social work)

   0-5 6-10 11-15 16-20 21-30 30or more

3. Please select your ethnicity

   Asian Black Hispanic White Other_____

4. Please select all that apply regarding the ethnicity of the clients you have served

   Asian Black Hispanic White Other_____

5. Are you male or female? 0 = male 1= female

Appendix F: MIKAT Permission Letter

11/8/12

Hi Sophia,

I received this message. I appreciate you asking, and you have my permission to use the MIKAT and modify it as necessary for your research. I have attached a document that may be helpful.

Best wishes for a successful study, Thad

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