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Effectiveness of a Theoretically-Based Judgment and Decision Making Intervention for Adolescents

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Abstract

Although adolescents demonstrate capacity for rational decision making, their tendency to be impulsive, place emphasis on peers, and ignore potential consequences of their actions often translates into higher risk-taking including drug use, illegal activity, and physical harm. Problems with judgment and decision making contribute to risky behavior and are core issues for youth in treatment. Based on theoretical and empirical advances in cognitive science, the Treatment Readiness and Induction Program (TRIP) represents a curriculum-based decision making intervention that can be easily inserted into a variety of content-oriented modalities as well as administered as a separate therapeutic course. The current study examined the effectiveness of TRIP for promoting better judgment among 519 adolescents (37% female; primarily Hispanic and Caucasian) in residential substance abuse treatment. Change over time in decision making and premeditation (i.e., thinking before acting) was compared among youth receiving standard operating practice ($n = 281$) versus those receiving standard practice plus TRIP ($n = 238$). Change in TRIP-specific content knowledge was examined among clients receiving TRIP. Premeditation improved among youth in both groups; TRIP clients showed greater improvement in decision making. TRIP clients also reported significant increases over time in self-awareness, positive-focused thinking (e.g., positive self-talk, goal setting), and recognition of the negative effects of drug use. While both genders showed significant improvement, males showed greater gains in metacognitive strategies (i.e., awareness of one's own cognitive process) and recognition of the negative effects of drug use. These results suggest that efforts to teach core thinking strategies and apply/practice them through independent intervention modules may benefit adolescents when used in conjunction with content-based programs designed to change problematic behaviors.

Keywords

Judgment and decision making; thinking; adolescents; substance use; treatment; intervention

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Author Contributions

DK conceived the study, participated in its design, conducted statistical analyses, and drafted the manuscript. DD developed the intervention, participated in study design and rationale, and wrote sections of the introduction and discussion. JB participated in the coordination of the study, wrote sections of the methods, and edited the full manuscript. GR participated in statistical analysis and interpretation of the data and contributed to the results section. PF was the Principal Investigator, contributed to the conceptualization of the original research, contributed to the study design and edited the manuscript. All authors read and approved the final manuscript.

Introduction

Theoretical advances in cognitive science have recently been applied to intervention research (Dansereau, Knight, & Flynn, 2013) and translated into curricula designed to promote metacognition and use of analytic strategies in adolescents' general decision making (Bartholomew, Dansereau, Knight, Becan, & Flynn, 2012). These applications have implications for the treatment of adolescents with problems resulting from poor choices (drug abuse, unprotected sex, bullying). Adolescents who enter treatment or education programs often do not recognize that their problems typically result from distorted thinking strategies (Titus & Dennis 2006). Yet, this type of problem recognition is considered a critical prerequisite for later stages of motivation for change and growth (Prochaska & DiClemente, 1984; Prochaska, DiClemente, & Norcross, 1992). It stands to reason that intervention efforts to improve motivation should occur early in the treatment process and should focus specifically on problem recognition (McWhirter, 2008). For adolescents who often base judgments on inaccurate or incomplete information, training strategies aimed at improving general thinking—self-awareness, guiding one's own thoughts, applying analytic strategies—may be especially effective for promoting better judgment and decision making. Proponents of fuzzy trace theory (Reyna & Farley, 2006) and dual process models (Klaczynski, 2005) generally support this view.

Improving problem recognition not only has implications for increasing internal motivation, but motivation to change is a consistent predictor of engagement in therapeutic activities (Joe, Knight, Becan, & Flynn, 2014). Thus, improving general thinking among adolescents should promote problem recognition and increase motivation to change. Higher motivation should stimulate better engagement in treatment and educational activities related to change, resulting in a greater capacity to benefit from these activities. The current study examined the first element in this hypothesized thinking-motivation-engagement change sequence, by addressing whether participation in the Treatment Readiness and Induction Program (TRIP; Bartholomew et al., 2012; based on an integrated judgment and decision making conceptual model) promotes general thinking improvements.

While most humans struggle with making accurate, appropriate, and productive judgments and decisions (Kahneman, 2011), adolescents in particular are notoriously prone to making riskier and less rational decisions than adults. Although adolescents demonstrate capacity for rational decision making (Millstein & Halpern-Felsher, 2002), they often fail to do so in social or emotionally arousing contexts. Their tendency to be more impulsive, place greater emphasis on peers, and ignore potential consequences of their actions often translates into higher risk-taking (Steinberg, 2007), and results in greater incidence of drug use, illegal activity, unprotected sex, and physical harm. For some youth, drug use represents an attempt to fit in socially, feel good, or experiment (National Institute on Drug Abuse, 2014); for others, risky behaviors are intertwined with maladaptive thinking that shapes interpretation of the physical and social environment and leads to continued risky (and often delinquent) behavior over time (Crick & Dodge, 1996; Dodge & Pettit, 2003).

Residential treatment offers an ideal setting for examining issues related to motivation, engagement and change. These facilities are well suited to deal with more severe cases with

regard to risky and delinquent behavior (Morrall, McCaffrey, & Ridgeway, 2004; National Institute on Drug Abuse, 2014). Many youth in these settings do not recognize that they are responsible for their problems, nor are they receptive to making personal changes (Titus & Dennis, 2006). Although remaining in treatment is a principal factor in recovery (Drug Strategies, 2005), maladaptive thinking can often lead to disengagement and “running” (leaving treatment early or against medical advice; Landrum, Knight, Becan, & Flynn, in press). Indeed, treatment completion among youth has historically been low (Etheridge, Smith, Rounds-Bryant, & Hubbard, 2001; Pompei & Resnick, 1987; Williams, Chang, & Addiction Centre Adolescent Research Group, 2000).

The “community as method” approach in Therapeutic Community (TC) settings relies heavily on group processes, using peers to facilitate psychosocial change in individuals (De Leon, 1997, 2000). Developing specific protocols to teach positive peer interaction that reinforces pro-social relationships would have clinically significant benefits within adolescent treatment settings. Many residential programs incorporate TC principals and include an orientation phase during which new clients become familiar with the rules and expectations of treatment. Adding a curriculum that provides a structured approach to facilitating decision making and pro-social peer interaction can complement traditional, modified TC approaches, and others utilized in adolescent residential treatments.

Although most treatment programs targeting adolescent problems include the objective of improving judgment and decision making skills, they have not explicity incorporated principles and practices derived from recent theoretical and empirical advances (Dansereau et al., 2013). In order to help bridge this gap, the present study examines the feasibility and effectiveness of an integrated theory-based judgment and decision making intervention for adolescents, the Treatment Readiness and Induction Program (TRIP). Although this study is grounded in drug abuse treatment, the TRIP intervention is generalizable to other mental and physical health settings because it is based on core thinking strategies that are common across populations and therapeutic settings.

The Treatment Readiness and Induction Program

The Treatment Readiness and Induction Program (TRIP; Bartholomew et al., 2012) focuses on increasing potential for personal change by helping youth think more clearly and systematically about themselves and their problems. TRIP is a compilation of tools and materials that have been explored with adults and adapted for use with adolescent clients (see Dansereau et al., 2013). The modules are designed for delivery in the first 30 days of treatment (orientation or induction phase).

Conceptual Description

The primary activities in TRIP are based on theories emerging from recent research on adolescent and adult decision making. The Integrated Judgment and Decision Making Model (IJDM; Dansereau et al., 2013) includes four interrelated system components: experience, analysis, wisdom/expertise, and metacognition. Two of these, the experiential and analytic systems have formed the cornerstones of contemporary theories (Klaczynski, 2005). The experiential system provides the human with rapid, preconscious heuristic

processing that relies on automatic pattern navigation, whereas the analytic system is conscious, slower, systematic, and relies on sequential processing. Gladwell (2005) refers to these as the “blink” and “think” systems respectively. IJDM incorporates two additional evidence-based systems, metacognition and wisdom/expertise. The metacognition system helps to monitor and control the selection of experiential and analytic processing approaches while the wisdom/expertise intersection comprises deep structures common to many situations (i.e., experiential and analytic schemas). The TRIP program contains activities to strengthen the four IJDM components, using well-established training tools and strategies. Additional motivational, emotional, and perspective-taking advantages are expected to arise from the synergy around TRIP objectives and training strategies.

Functional Description

TRIP consists of 8 modules that can be used in open groups (new members join throughout) or closed groups (group membership is predetermined and remains static). The 8 modules are organized around 4 main themes related to the 4 components of IJDM: (1) Mapping (graphically enhanced analytic decision making), (2) Nudges (practice identifying, developing, and using cues and signals to enhance metacognition), (3) Downward Spiral (understanding the consequences of poor decision making through an experiential board game), and (4) Work It (repetitive use of structured maps to foster development of a coherent schema that enhances wisdom/expertise). The TRIP Manual (Bartholomew et al., 2012) contains a syllabus outline and rationale for each module, detailed instructions for leading interactive activities, discussion and processing questions that correspond with activities, and templates for all handouts.

Underlying Strategies

Three primary strategies are used to achieve TRIP objectives: (1) Mapping-Enhanced Counseling, (2) experiential games and activities, and (3) peer facilitation. Mapping-Enhanced Counseling (Dansereau & Simpson, 2009) forms the core of TRIP and serves to focus attention, facilitate communication, and visually illustrate theory-based concepts and ideas for better decision making. Free style maps are drawn “from scratch” during group time or as homework. Guide maps are “fill in the blank” templates that “guide” thinking around a particular topic. Both types employ boxes (nodes) and lines (links) to visually illustrate clients’ thoughts, feelings, and actions and how they relate to each other. The TRIP curriculum is designed to give counselors and coaches the flexibility to tailor the use of the mapping-enhanced graphic representations to meet the needs, preferences, and issues most salient to their clients. For instance, the curriculum provides suggestions for topics to map, but counselors can also choose to use examples from clients’ personal experiences or to address an issue that arises within the treatment milieu. Consequently, a counselor may use maps individually or in groups to stimulate discussion, clarify and organize thinking, and to increase memory for what has been covered. Mapping (included in the National Registry of Evidence-based Programs and Practices; NREPP) is particularly effective for clients with lower cognitive functioning (see Czuchry & Dansereau, 2004) and improves the psychological status of ADHD-problem clients (Newbern, Dansereau, Czuchry, & Simpson, 2005).

In addition to Mapping Enhanced Counseling, experiential games and activities are incorporated into all 8 sessions of TRIP to encourage self-exploration and understanding and to increase decision making competency. Each session begins with a *cognitive magic trick*, comprised of an interactive game, brain-teaser, or a DVD featuring a professional magician. This 10–20 minute activity is designed to reveal thinking errors, introduce the session topic, encourage pro-social interaction, and generate interest in improving thinking skills. In two of the 8 sessions, the consequences of drug use are explored as youth play the Downward Spiral game (Czuchry, Sia, Dansereau, & Dees, 1997; Czuchry, Sia, & Dansereau, 2006; adapted for adolescents). Using a classic board game format, each player takes on the role of an individual who has decided to continue poor decision making about drugs and other risky activities. As the game unfolds, players roll the dice and land on squares that reveal the consequences of staying involved in a high risk lifestyle. Players lose their health, social support, financial resources, legal status, and mental health over the course of the game. The areas of life impacted by poor choices are represented on the game board through color-coded cards that outline a (1) poor choice scenario, the (2) outcome or consequence of the scenario (i.e., loss of points, money, or both), and (3) a quote, saying, or fact that relates to the consequences. Players begin the game with \$200 in play money and basic possessions (e.g., car, TV, computer, cell phone). Analogous to real life consequences, the longer a person plays, the more they tend to lose. In a similar vein, recovery wins the game. These experiential activities are intended to provide vicarious decision making experiences that can be internalized by participants.

Peer facilitation occurs in TRIP sessions as a third primary strategy. Interactive activities throughout the sessions are designed to facilitate cooperative peer learning. For instance, participants who have gained experience using mapping to illustrate and explore problems in previous sessions are encouraged to share their experiences with and model mapping for new and less experienced group members. Additionally, peer mentors (clients in later stages of treatment, who have shown progress in the program) are trained to assist counselors during Downward Spiral activities, helping players with rules, maintaining flow of the game, and providing pro-social youth input during discussions and interpretations. Youth selected to serve as peer facilitators are given training and coaching from TRIP counselors to prepare them for their roles. Thus, TRIP not only provides structured opportunities for newly admitted clients to interact with peers in positive ways, but it also provides training and positive reinforcement for adolescents who choose to serve as mentors.

Literature Related to TRIP

The current study represents the first evaluation of a comprehensive version of TRIP. However, prior work has examined the independent effectiveness of its key components and strategies presented above. These studies have been conducted with older adolescents and young adults in educational settings and drug abuse treatment facilities.

Mapping has the richest empirical history with over 80 studies indicating its value in teaching, learning, counseling, general problem solving, and recovery from drug abuse (see Dansereau, 2005; Dansereau & Simpson, 2009; and NREPP for reviews). In general, mapping takes advantage of spatial thinking to improve cognition and commitment to

change. The basis of mapping evaluations involve comparing standard operating procedures to mapping-enhanced operating procedures on both subjective (self-report) and objective (session attendance, content tests, urinalysis, and recidivism) measures.

Research has also documented the utility of specific TRIP components, including the Downward Spiral Game, use of internal nudges, structured decision tools, and peer collaboration. Investigations of the role of pedagogical and motivational games (primarily the Downward Spiral) have shown improvement in subsequent treatment engagement when added to an existing curriculum (Czuchry & Dansereau, 2005; Czuchry et al., 1997). Internal nudges have been studied using the concept of a Thought Team, a group of mental advisors that can be consulted to provide alternative perspectives and reminders to improve decision making (Morey & Dansereau, 2010). Structured decision tools, such as Work It, have been shown to produce more personally satisfying choices (Kreitler, Dansereau, Barth, Repasky, & Miller, 2012). Finally, peer collaboration has been shown to be an effective motivation and learning approach. Research supporting peer collaboration has been surveyed by numerous authors (see O'Donnell & King, 1999).

TRIP components have been shown effective at facilitating attention in older males within general and substance-using populations (Czuchry, Dansereau, Dees, & Simpson, 1995; Dansereau, Joe, & Simpson, 1995; Newbern et al., 2005) and may prove useful for any adolescent with decision making deficits. Prior work with adolescents in residential substance use treatment suggests that females enter treatment with poorer decision making and premeditation skills compared to their male counterparts (Knight, Becan, Landrum, Joe, & Flynn, in press). In the same study, males also reported lower assertiveness, higher premeditation, and higher attention compared to females, and females reported higher negative and positive urgency, indicating a tendency to act impulsively under the influence of negative and positive affect. These gender differences are consistent with previous research documenting more severe problems among females who seek treatment (Greenfield et al., 2007; Stevens, Estrada, Murphy, McKnight, & Tims, 2004; Stevens, Murphy, & McKnight, 2003). Yet, the findings appear inconsistent with research documenting greater attention and learning challenges among males (Cantwell, 1996). It is important to note that while females in the general population may outscore males on cognitive measures (Cross, Copping & Campbell, 2011; Silverman, 2003), females in treatment may share some of the thinking-related challenges that their male counterparts display, particularly when coupled with other mental health issues.

Current Study Objectives

As indicated above, TRIP components and strategies have been evaluated in relative isolation and found to be effective for older adolescents and adults. The goal of the present study is to describe an approach to integrating these individual parts into a coherent manual-based intervention and to examine its utility with a high-risk adolescent population. The specific objectives were to (a) examine the effectiveness of TRIP in promoting improved general decision making and use of metacognitive and analytic strategies, (b) explore potential gender differences, and (c) document participant attitudes toward TRIP sessions. Based on prior research examining TRIP components in isolation, it is hypothesized that

youth who receive TRIP in addition to standard operating practice (SOP; see description in Methods) will show greater gains over time in decision making and premeditation compared to youth receiving SOP only. Furthermore, TRIP clients are expected to demonstrate significant improvement in self-awareness, the use of targeted thinking strategies, positive thinking, and understanding the consequences of risky choices. Males are expected to benefit more from TRIP than females, although both genders should show gains. Finally, participants in TRIP are expected to report favorable attitudes toward TRIP sessions, and higher satisfaction ratings are expected to be related to greater improvement in general thinking and TRIP-specific content knowledge.

Method

Procedures

Data were collected from six adolescent substance abuse treatment facilities as part of an ongoing research project. All programs used a modified therapeutic community approach as standard operating practice (SOP), which included a highly structured residential environment with on-campus schooling (provided through the local school district), individual and group counseling for substance use and related issues, vocational and skills training, case management linkage to social services, and the use of a phase system (youth earn privileges as they move from orientation to higher levels within the system). SOPs were similar across the study sites, and all included group counseling as the primary treatment. Institutional Review Boards at the research institution and the parent agencies for participating treatment programs approved human subjects research protocols. Participating programs entered into a Qualified Service Organization Agreement (QSOA) with the research team whereby screening and assessment services, all training and materials needed to conduct the 8-session curriculum, and analytic and interpretation services were provided at no cost in exchange for de-identified treatment episode, assessment, and curriculum attendance data.

Program participation occurred in two phases (1) assessment only and (2) assessment and curriculum. Throughout the project, programs were granted access to adolescent screening and assessment materials via an online assessment system operated by the research team. In addition to providing a mechanism for data collection, the online system produced automated immediate client-level assessment reports for staff to use in client documentation and treatment planning. Participants entering treatment during the assessment-only phase were classified as the Standard Operating Practice (SOP) group. After approximately 9 months, program staff were trained on the Treatment Readiness and Induction Program (TRIP; Bartholomew et al., 2012) and clients were placed in TRIP groups immediately upon completion of intake assessments. Youth with treatment admission dates after implementation of the TRIP curriculum were classified as the SOP plus TRIP (TRIP) group.

Initial assessment training began late 2010, and data sharing began in early 2011. Throughout the data collection period, programs shared de-identified treatment episode and assessment data with the research team using either the online system or paper/pencil forms. Each facility and each assessment staff facilitator within programs were assigned identification numbers. Program staff assigned identification numbers to newly enrolled

clients. These identification numbers were used to set up new client accounts, to schedule and administer client assessments at intake and at each follow-up administration and to link client assessment responses across time. To protect client confidentiality, names and identifying information associated with client IDs were known only to program staff and not shared with the research team. Each assessment facilitator received in-depth training on how to use the system, including how to create and access accounts using a unique log-in number and password. Clients responded to assessment items independently while their computer use was monitored by staff. Facilitators assisted when questions or problems arose. On average, the assessment-only phase continued for 9 months before TRIP was implemented (range 7–11 months).

In the Fall 2011, Program Directors attended a 1-day meeting on the general approach to TRIP implementation (rationale, sample activities) and were asked to carefully consider which of their clinical staff should be trained on TRIP and how the curriculum would best be implemented at their facility (e.g., 2 weekly sessions over 4 weeks, 4 weekly sessions over 2 weeks, etc.). A “train-the-trainer” model was used whereby two clinical staff (identified by Program Directors) attended a 2-day training on implementing the TRIP curriculum. The clinical staff training covered the use of Mapping-Enhanced Counseling, an overview of session content, how to facilitate session activities, how to train and utilize peer mentors, and strategies for implementing the curriculum at their particular site. Attendees were responsible for conducting TRIP groups at their agencies and for training additional staff to ensure that the TRIP curriculum would continue in the event of staff turnover. Continuing education credits for training participation were awarded to Program Directors and clinical staff.

Participating programs received all materials needed to implement TRIP (manual, DVD, Downward Spiral game, paper copies of maps, and a flash drive with all curriculum and training materials). TRIP implementation began at each facility approximately one month after TRIP training. One of the programs served as the training and implementation pilot and therefore received curriculum training and began conducting groups earlier than the other programs. Curriculum facilitation continued between 6 and 12 months, with the goal of each facility completing at least 10 cycles of the 8 curriculum modules. TRIP facilitators were generally female (65%), white (76%) and had a Master’s degree or were certified/licensed counselors (71%). Checklists on group attendance and fidelity to curriculum content were completed by group facilitators after each TRIP session. These one-page forms were session-specific and included entry fields for staff to record session date and identification numbers of clients and peer mentors in attendance. Checklists also presented a list of session-specific curriculum components to which staff responded either yes (the component was covered in the session) or no (not covered). Overall, counselors reported feeling confident and self-assured in 100% of the TRIP sessions. They used maps to organize group discussions in 95% of the TRIP sessions and were able to help the group stay focused and working in 94% of the sessions. Regarding level of adherence to the TRIP curriculum, counselors reported covering all prescribed content in 90% of the sessions and used board/flip charts to map out group ideas in 96% of the sessions.

The research team provided technical support to facility staff via e-mail and telephone. Weekly reporting of fidelity checklists enabled prompt communication between research and facility staff on protocol adherence during TRIP sessions. Site visits were conducted with each facility at mid-implementation (after 5 cycles of TRIP) to explore staffing attitudes toward TRIP facilitation, observe 1–2 client sessions using the TRIP curriculum, and respond to environmental factors that were serving as natural facilitators or barriers to TRIP implementation and continued sustainment across the remaining 5 cycles of TRIP. Additional training support was offered to facilities with turnover in TRIP facilitators.

Participants

Eight adolescent community-based residential substance abuse treatment programs in 3 states were recruited in 2010, with assistance from regional Addiction Technology Transfer Centers. Residential programs were targeted because the restrictive environment provided greater control for extraneous influences (home life, peers), and greater likelihood of session attendance over a 30-day period. Number of staff with direct client contact varied, ranging from 6 to 101 counselors ($M = 27$; Median = 13) including full time, part time, and contractual social workers, case managers, clinical supervisors, and therapists at each facility per year, serving 25 to 100 clients daily ($M = 57$). Programs were located in rural, suburban, and urban areas. Planned length of stay varied across programs ranging from 30 days to 12 months. Actual average length of stay for participants across all facilities was 88 days. Most programs were affiliated with a larger parent organization, were private non-profit programs, and described their treatment philosophy as a cognitive behavioral, modified therapeutic community, or medical model. Six of the eight participating programs were represented in these data. One agency lost parent organization funding and closed within a month of the TRIP implementation staff training. The other agency lacked leadership allocation of resources (i.e., staffing time to conduct assessments and routinely facilitate TRIP sessions), resulting in a small sample size ($n = 6$ clients with complete data). The client sample from the two excluded agencies included a higher proportion of clients who were male, Hispanic, and reported a prior treatment episode compared with the youth enrolled in the six agencies that were included.

Assessment data was available at Time 1 (intake) or Time 2 (Day 35) on a total of 1,728 adolescents. Of those, 693 completed assessments at both times and had complete data on all variables of interest. Loss of Time 1 data was due primarily to scheduling issues (e.g., limited access to computers at some facilities early in the project) or early discharge within the first week of treatment. Loss of Time 2 data was due to treatment-specific factors (e.g., early discharge due to physical altercations, leaving against medical advice) and non-treatment factors (e.g., staff forgetting to schedule Time 2, shifting of responsibility for Time 2 assessments from one staff member to another). An additional 174 clients did not meet inclusion criteria for either the SOP or TRIP group. Thus, the final study sample represents 519 participants ($n_{\text{SOP}} = 281$, $n_{\text{SOP+TRIP}} = 238$). A comparison of the Demographic differences between clients included in the 519 sample and those that were ineligible or did not have two data points indicated that a higher proportion of clients included in the study were male, Hispanic, African American and less likely to report high drug use severity. Comparisons of the treatment groups (SOP; TRIP) indicated no

significant differences on demographic measures (see Table 1). Criteria for inclusion in the SOP group were (1) enrollment in treatment 60 or more days prior to program implementation of TRIP (to avoid possible exposure to program preparations for curriculum implementation), (2) no attendance at a TRIP session during treatment, and (3) completion of both Time 1 and 2 assessments. Criteria for inclusion in the SOP plus TRIP group (TRIP) included (1) enrollment on the day of or after program implementation of TRIP, (2) completion of intake assessment at Time 1 prior to attendance at a TRIP session, (3) completion of Time 2 assessment, and (4) attendance at 4 or more TRIP sessions prior to completion of the Time 2 assessment.

Assessment data represent 519 adolescents enrolled in 6 of the treatment programs in 2011 and 2012 who completed assessments at admission (Time 1) and again after 35 days in treatment (Time 2). Participants were mostly male (63%) and ranged in age from 12 to 18 ($M = 15.74$, $SD = 1.07$). The most frequently reported race was Hispanic (53%), followed by Caucasian (26%), and Multiracial (10%). Over half (59%) reported juvenile justice involvement within the 30 days immediately prior to treatment enrollment (e.g., probation, drug court, or juvenile detention). The majority reported prior substance abuse treatment (66%) and scored within the high severity range on the Texas Christian University (TCU) Drug Screen II (72%; Knight, Simpson, & Hiller, 2002). Marijuana, alcohol, cocaine, and methamphetamines were the most commonly reported substances. Fifty-six percent reported daily marijuana use (17% weekly), 8% reported daily alcohol use (19% weekly), 5% reported daily cocaine use (6% weekly), and 4% reported daily methamphetamine use (5% weekly). When asked which substance caused them the most problems, marijuana was reported most frequently (31%), followed by “none” (19%), and alcohol (11%).

Measures

Newly enrolled adolescents completed the TCU Drug Screen II and the Texas Christian University (TCU) Risk Form (Knight et al., 2002) which cover demographics and preceding risk factors. The Drug Screen contains an index of 12 items assessing drug use severity based on the Diagnostic Statistical Manual (DSM) criteria for drug dependence (American Psychiatric Association, 2000). Example items that mapped to specific DMS criteria included “Did you use larger amounts of drugs or use them for a longer time than you planned or intended?” and “Did you increase the amount of a drug you were taking so that you could get the same effects as before?” Responses were coded resulting in scores that range from 0 to 9. Frequency of drug use in the past 12 months was measured using a list of 13 drugs. Example items from the RISK Form include “Have you ever been treated for drug use problems?” and “In the last 30 days prior to entering this program were you in juvenile detention?” Most demographic and risk factor items were yes/no and multiple choice.

General measures of judgment and decision making—The Client Evaluation of Self and Treatment (CEST; 141 items; Garner, Knight, Flynn, Morey, & Simpson, 2007; Joe, Broome, Rowan-Szal, & Simpson, 2002; Knight et al., in press) was administered at Time 1 (intake) and Time 2 (day 35). CEST scale items included response options along a 5-point Likert-type scale (1 = *disagree strongly*, 3 = *uncertain*, and 5 = *agree strongly*). Some items were reverse-scored, thus the response value was reflected by subtracting the raw

response from 6. Scale scores were computed by averaging responses (after reflecting reversed items) and multiplying the average by 10. Higher scores indicated higher levels of the measured construct (e.g., higher decision making).

The Decision Making (DM) scale comprised 8 items, including “You think about consequences of your actions,” that assessed the tendency to think carefully when making decisions ($\alpha = .79$; Knight et al., in press). The Premeditation (PM) scale was adapted from Whiteside & Lynam (2001; see Knight et al., in press) and assessed the tendency to think before committing to an action. Six items comprised this scale, including “I usually think carefully before doing most things” ($\alpha = .85$).

TRIP-specific content knowledge and satisfaction—At the time that TRIP groups were implemented, two additional instruments were added to assess constructs specific to TRIP sessions. The TRIP Knowledge Form included 27 content knowledge items, assessed at Times 1 and 2. The TRIP Satisfaction Form included 15 satisfaction items, assessed at Time 2. Response options included a 5-point Likert-type scale (1 = *disagree strongly*, 3 = *uncertain*, and 5 = *agree strongly*), and some items were reverse-scored. Scale scores were computed by averaging response items (after reflecting reversed items) and multiplying the average by 10. Psychometric analyses were conducted on items from the Knowledge and Satisfaction Forms. The TRIP Knowledge Form sample included 825 adolescents across all groups (SOP, TRIP, or ineligible; some of whom lacked Time 2 data). The TRIP Satisfaction Form sample included 399 adolescents at Time 2 who were admitted to treatment after TRIP began and were either in the TRIP group or who did not meet eligibility requirements for the TRIP group.

Prior to principal components analysis of items in the TRIP Knowledge Form, the decision was made to remove one item phrased in the negative and three items that were redundant with the Decision Making and Premeditation scales. Five additional items addressing topics covered in Downward Spiral sessions were excluded from the principle components analysis because of their focus on drug use consequences rather than general thinking. These were grouped together into a “Recognizing Drug Use Consequences” (RDUC) scale. Analysis of the remaining 18 items resulted in three eigenvalues above 1 (3.02, 2.65, and 2.45). Two of the 18 items were dropped due to a loading of .40 or higher on more than one factor, resulting in a three-scale structure with 16 items representing Self-Awareness, Strategy Use, and Positive Approach (see Table 2). Coefficient alpha reliability estimates were computed for the four Knowledge scales (Cronbach, 1951), and all exceeded .70. Self-Awareness (SA; $\alpha = .84$, $n = 803$), included 7 items, Strategy Use (SU; $\alpha = .76$; $n = 816$), included 6 items, and Positive Approach (PA; $\alpha = .82$; $n = 823$), consisted of 3 items. The four Recognizing Drug Use Consequences items included “Drugs mess with my ability to think clearly,” “The longer I keep using drugs, the harder it will be to reach my goals in life,” “I see clearly how drugs and alcohol could ruin my life,” and “Lately, I have understood what can happen if people keep using drugs.” The original alpha was .77 ($n = 825$), but an item-total correlation of less than .40 with the item “I would be good at talking people out of using drugs” suggested it be dropped. The resulting 4-item scale had an alpha of .79. Alphas computed on the subsample of clients who attended four or more TRIP sessions ($n = 257$) were comparable (SA = .86, SU = .74, PA = .85, and RDUC = .77).

Principal components analysis of the 15 items in the TRIP Satisfaction Form resulted in two eigenvalues above 1 (5.89 and 3.37). Two items did not load on either factor and were dropped. Results support a two-scale structure representing Helpful and Engaging (see Table 2). Helpful ($\alpha = .95$, $n = 391$) included 9 items; Engaging ($\alpha = .87$, $n = 399$) included 4 items. Alphas computed on the subsample of clients who attended four or more trip sessions ($N = 266$) were also acceptable: Helpful $\alpha = .95$; Engaging $\alpha = .84$.

Analytic Strategy

Hypotheses 1 and 2 were tested using Repeated Measures ANOVA. To examine the effectiveness of TRIP on general thinking, two separate 2×2 Repeated Measures ANOVAs were run with Decision Making/Premeditation as the dependent variable and Group (SOP versus TRIP) and Gender as factors. This strategy enabled examination of potential differences due to Gender and Group at both time points and of interactions over time. To examine change in metacognitive and analytic strategies, four separate 1-way Repeated Measures ANOVAs were run with Gender as the between factor and Self-Awareness, Strategy Use, Positive Approach, or Recognizing Drug Use Consequences as the dependent variable. This approach enabled an examination of change over time and the interaction between gender and time. Because youth receiving services within the same treatment program are likely to share common variance (Raudenbush & Bryk, 2002), PROC MIXED (SAS, 2003) was used to examine potential influence of program membership on TRIP effectiveness. To test Hypothesis 3, bivariate correlations were used to examine associations between the two satisfaction scales and difference scores for Decision Making, Premeditation, and TRIP Knowledge domains.

Results

Change in General Decision Making

Change over time was examined using two 2×2 repeated measures ANOVAs with Decision Making/Premeditation as the dependent variable and Group (SOP versus TRIP) and Gender as factors. Means by Group are presented in Table 3; means by Group and Gender are shown in Table 4. Results indicated significant Gender differences in Decision Making at Time 1 (intake; $F_{(1, 543)} = 6.60$, $p = .05$), with males scoring higher than females, but no significant Group main effect or Gender X Group interaction. Main effects at Time 2 (day 35) were significant for both Group ($F_{(1, 543)} = 8.71$, $p = .01$) and Gender ($F_{(1, 543)} = 10.70$, $p = .01$), with TRIP clients scoring higher than SOP clients on Decision Making and males scoring higher than females. The Time 2 Group X Gender interaction was not significant. All clients improved over time ($F_{(1, 540)} = 68.16$, $p = .0001$), however, clients in TRIP showed greater improvement compared to clients in SOP only ($F_{(1, 540)} = 7.30$, $p = .01$). The Gender X Time and Group X Gender X Time interactions were not significant. In order to determine the magnitude of the increase over time for youth in TRIP versus SOP, effect size was computed by dividing the mean difference between the TRIP and SOP means by the pooled standard deviation (Cohen's d ; Cohen, 1988). Calculations revealed a larger effect size for the TRIP group ($d = .49$) compared to SOP ($d = .27$).

Results for the model with Time 1 and Time 2 Premeditation as the dependent variable indicated significant Gender differences at Time 1, with females scoring lower on Premeditation compared to males ($F_{(1, 543)} = 12.73, p = .001$). Neither the Group main effect nor the Gender X Group interaction was significant. The Gender effect was also significant at Time 2 ($F_{(1, 543)} = 12.75, p = .001$), with females scoring lower than males. The overall Group X Gender interaction was marginally significant ($F_{(1, 540)} = 2.95, p = .087$), with males in TRIP scoring highest overall ($M = 33.77$), followed by males in SOP ($M = 32.11$) and females in both groups ($M = 30.43$ and $M = 30.68$ for TRIP and SOP respectively). All clients improved over time ($F_{(1, 540)} = 53.47, p = .0001$), and no interactions with Time were significant. Effect sizes were similar for TRIP ($d = .35$) and SOP ($d = .34$).

To examine the potential effects of shared variance due to program membership, additional analyses were run using PROC MIXED (SAS, 2003). Clients from one of the six programs were excluded because the program submitted no data on clients in the TRIP group. Models were run separately for Decision Making and Premeditation. The Time 2 measure served as the dependent variable and Group, Gender, the corresponding Time 1 measure were entered as independent variables. Program membership was entered as a fixed effect in the model. Results were similar to findings from the repeated measures ANOVA model, and program membership was not significant in either model. Decision Making was higher among TRIP clients (compared to SOP; $F_{(1, 510)} = 6.56, p = .05$), higher among males (compared to females; $F_{(1, 510)} = 5.68, p = .05$), and correlated with Time 1 Decision Making ($F_{(1, 510)} = 135.64, p = .0001$). Differences due to program membership were not significant. Results for Premeditation were also similar to the repeated measures ANOVA model. Premeditation was slightly higher among males ($F_{(1, 510)} = 3.14, p = .077$) and scores were correlated with Time 1 Premeditation ($F_{(1, 510)} = 105.08, p = .0001$). Differences due to Group and program membership were not significant.

Change in TRIP Knowledge Content

To better understand the ways in which TRIP influenced general decision making, scores on curriculum-specific constructs were examined among youth receiving TRIP. A total of 239 clients included in the TRIP group (97%) had complete data on the TRIP Knowledge Form at Times 1 and 2. Change over time was examined using a one-way (Gender) repeated measures ANOVA with the Time 1 and 2 composites as dependent variables. Means by Group and Gender are depicted in Table 5. Scores on all four measures increased significantly over time: Self-Awareness ($F_{(1, 237)} = 86.08, p = .0001$), Strategy Use ($F_{(1, 237)} = 48.92, p = .0001$), Positive Approach ($F_{(1, 237)} = 40.48, p = .0001$), and Recognizing Drug Use Consequences ($F_{(1, 237)} = 64.19, p = .0001$). There were no gender differences in Self-Awareness at Time 1. Although males reported higher Self-Awareness at Time 2 compared to females ($F_{(1, 237)} = 10.60, p = .01$), the Gender X Time interaction was not significant. There were no gender differences in Strategy Use at Time 1. At Time 2, males reported more Strategy Use compared to females ($F_{(1, 237)} = 4.14, p = .05$), and the Gender X Time interaction was significant ($F_{(1, 237)} = 4.88, p = .05$). These findings suggest different change trajectories for males and females in Strategy Use over time, with males showing greater improvement compared to females. Results for Positive Approach indicated

that males generally scored higher than females across both time points ($F_{(1, 237)} = 5.35, p = .05$) and the Gender X Time interaction was not significant. There were no gender differences in Recognizing Drug Use Consequences at Time 1, and a marginal difference due to Gender at Time 2. Males reported slightly higher awareness of how drug use impacts thinking compared to females ($F_{(1, 237)} = 2.99, p = .085$). A significant Gender X Time interaction ($F_{(1, 237)} = 4.98, p = .05$) suggests different change trajectories for males and females over time, with males showing greater improvement in recognition of how drug use impacts thinking compared to females.

To examine the potential influence of program membership on change in TRIP knowledge constructs, four analytic models were tested using SAS PROC MIXED, one corresponding to each of the four constructs. The Time 2 measure served as the dependent variable and Gender and the corresponding Time 1 measure were entered as independent variables. Program membership was included as a fixed effect in the model. Program membership was not significant, and results were similar to findings from the repeated measures ANOVA models. For Self-Awareness, Gender ($F_{(1, 232)} = 4.35, p = .05$) and Time 1 ($F_{(1, 232)} = 59.00, p = .0001$) were significant; Program membership was not. For Strategy Use, Time 1 ($F_{(1, 232)} = 69.60, p = .0001$) was significant, gender was marginal ($F_{(1, 232)} = 3.21, p = .075$), and program membership was not significant. For Positive Approach, only Time 1 was significant ($F_{(1, 232)} = 48.61, p = .0001$); program membership and Gender were not. For Recognizing Drug Use Consequences, Time 1 was significant ($F_{(1, 232)} = 58.80, p = .0001$), Gender was marginal ($F_{(1, 232)} = 3.59, p = .061$), and program membership was not significant.

Satisfaction with TRIP

Regarding Satisfaction with TRIP, 63% of clients either agreed or agreed strongly that TRIP sessions were “helpful” (overall $M = 36.74, SD = 9.08$). Seventy-four percent either agreed or agreed strongly that TRIP sessions were “Engaging” (overall $M = 37.08, SD = 8.31$). Bivariate correlations between the two satisfaction scales and difference scores for Decision Making, Premeditation, and TRIP Knowledge domains indicated that higher ratings of TRIP as Helpful were associated with greater gains on all measures of change (DM $r = .12, p = .05$; PM $r = .22, p = .001$; SA $r = .29, p = .001$; SU $r = .31, p = .001$; PA $r = .19, p = .01$; RDUC $r = .30, p = .001$). Higher ratings of TRIP as Engaging were also associated with greater gains on all four TRIP Knowledge measures (SA $r = .29, p = .001$; SU $r = .30, p = .001$; PA $r = .16, p = .05$; RDUC $r = .32, p = .001$). The association between Engaging and change in Decision Making was not significant ($r = .09$); the relationship between Engaging and Premeditation was marginally significant ($r = .10; p = .10$).

Discussion

The TRIP curriculum represents a first attempt at designing an intervention that utilizes various components of the Integrated Judgment and Decision Making Model (IJDM; Dansereau et al., 2013). Built on recent theoretical advances in cognitive science (e.g., Albert & Steinberg, 2011; Klaczynski, 2005), TRIP integrates experiential and analytic thinking through the application of interactive, graphically-enhanced tools and strategies.

Experiential activities in the form of ice-breakers serve as an initial “portal” or avenue to capture and maintain attention early in the session. Mapping-Enhanced Counseling (Dansereau & Simpson, 2009) is then used (in free-map or guide-map form) to explore complex issues including sequences, causes, consequences, and pros/cons of various behavioral response options. Adolescents are given the flexibility to examine a wide range of issues using the tools provided, allowing them to participate on a superficial or deeper level, depending on their personal needs, level of comfort, or level of trust with their group. By applying analytically created schemas (ACS; guide maps and graphical tools) to their own personal problems, they gain “wisdom” or “expertise” that is personalized and pertinent to their current situation. With routine practice, ACSs and other terminology in TRIP (e.g., when you have a decision to make, “Work It” out) are internalized and can be “tapped” when facing similar situations in the future.

A second “portal” or avenue through which TRIP is intended to facilitate judgment and decision making is through the metacognitive system (Dansereau et al., 2013). Self-regulation is highly important in productive decision making. Impulsivity not only can result in judgment errors when decisions are based on too little or inaccurate information, but can also lead to the internalization and perpetuation of maladaptive behavioral routines. By raising awareness of one’s automatic thought processes and providing opportunities to restructure and practice alternative ways of responding in situations (e.g., cognitive restructuring), the schemas that are stored and accessed within the experiential system can be modified and/or overwritten. Activities in Nudge and Work It sessions strive to promote self-awareness and the use of specific metacognitive strategies for promoting more systematic and objective thinking.

Results of the evaluation of the Treatment Readiness and Induction Program (TRIP) indicate its effectiveness. Compared to Standard Operating Practice (SOP) alone, youth receiving TRIP in addition to SOP reported greater improvement in general decision making. Premeditation, or the tendency to think carefully about options/plans before acting, improved among clients in both groups. Youth in TRIP groups also reported increased self-awareness, strategy use, and positive-focused thinking (e.g., positive self-talk, goal setting) over time. Recognition of the negative effects of drug use on thinking also increased among youth in TRIP.

The hypothesis that males would benefit more from TRIP than females was partially supported. Males generally scored higher on decision making and premeditation than females across both time points, and both genders showed significant improvement on these domains. Males reported more positive-focused thinking (across time points) than females, with both genders again showing significant improvement over time. With regard to the use of metacognitive strategies and recognition of the negative effects of drug use on thinking, males and females reported comparable scores at Time 1, and improvement was greater among males. These findings suggest that TRIP is generally effective for males and females but may be particularly beneficial for promoting use of metacognitive and analytic strategies in routine decision making among males.

TRIP sessions were implemented with high fidelity, with over 90% of content covered in each session. Informal interviews with TRIP counselors following implementation indicated strong satisfaction with session content and activities. They reported that the materials were easy to use, adolescent clients responded positively to the interactive activities and graphical approaches to problem solving, and the terminology was generalizable beyond TRIP sessions (e.g., asking a client to “Work It” when facing a difficult problem). Interviews with youth who attended TRIP sessions revealed favorable reactions as well. Adolescent clients reported that mapping helped them organize thoughts and recognize consequences of actions. The interactive activities helped them “get outside their comfort zone.” Work It activities helped them broaden their thinking—helping them to consider various options, rather than just selecting from a set of choices. Satisfaction ratings confirm these subjective impressions of TRIP. Seventy-four percent reported that TRIP sessions were engaging and 63% viewed them as helpful. Youth who rated the sessions as more helpful reported significant change on Decision Making, Premeditation as well as TRIP-specific content; those who reported sessions as more engaging showed gains in TRIP-specific content (self-awareness, use of strategies, etc.).

While results of this study suggest that TRIP has potential as a tool for promoting judgment and decision making among youth, this study raises new questions regarding which elements of the curriculum are most effective. Some activities contained within TRIP are highly interactive and engaging. Others rely on careful thinking and introspection and require focused attention and considerable thought. It will be important to determine which of these elements are effective for promoting better judgment, which promote better motivation, and which promote interest in the session versus a personal commitment to change. Perry et al. (2011) state that to be effective, interventions with youth should utilize high arousal activities to capture attention then transition to lower arousal activities to maintain attention and promote a deeper level of processing. The experiential activity that opens each TRIP session (e.g., cognitive magic trick) is designed to capture attention and elicit interest. Subsequent activities incorporate the “deep processing” piece, but the degree to which this transition is done effectively may vary. Furthermore, some sessions incorporate more experiential activities (e.g., Free Mapping, Downward Spiral Game), while others incorporate more analytic activities (e.g., Work It guide maps). Future studies are needed to begin to understand how the structure of sessions facilitates buy-in during the sessions and engagement in the treatment process (e.g., satisfaction with treatment, counselor rapport).

Future Directions

This study highlights several clinical and research opportunities. While the TRIP approach shows promise, there still exists a need to refine and further develop cognitive interventions that improve general judgment and decision making among youth who engage in risky behavior. In order to truly examine the applicability of IJDM as a framework for developing clinical interventions, measures that correspond with various components of the model (experiential, analytic, wisdom/expertise, metacognition) are needed. This study represents a first step toward this aim, but falls short of mapping how change in general decision making corresponds with specific components of the IJDM. The feasibility and utility of TRIP in other settings – outpatient treatment, schools, etc. should be examined to determine the

generalizability of these findings. Although TRIP was assessed in drug abuse treatment settings in the present study, with very little modification this program could be used to enhance prevention and general education activities. This could be accomplished by integrating individual TRIP components into existing curricula or providing a combination of the components as a stand-alone program. Finally, improved decision making is only one of several desired outcomes for youth in treatment for substance problems. Research is needed to determine whether the utility of TRIP extends beyond general decision making to measures of induction (e.g., problem recognition, readiness to change), engagement (e.g., treatment participation, counselor rapport), and reductions in risky behavior. Future studies should examine the ways in which motivation for personal change (including problem recognition, perceptions of social rewards and consequences, and elements of the treatment context) interacts with TRIP components to produce better decision making and more active engagement in treatment.

Policy Implications

Most adolescent interventions for reducing risks are topic or concept based such as the prevention of suicide, drug abuse, delinquency, and bullying. In each case, problems with judgment, decision making, and planning are viewed as core issues. However, these interventions tend to treat them as highly contextualized processes within the specific topic of interest. Recent empirical and theoretical work on judgment and decision making suggests that these core processes can be examined and improved independent of context. In response to this advancement, the present study examines a decision making intervention that can potentially be inserted into a variety of content-oriented programs as well as administered as a separate curriculum. The promising results reported above suggest that policy makers should focus on initiating and supporting efforts to teach and improve core thinking strategies through independent intervention modules that can be used in conjunction with content-based programs designed to change problematic behaviors. This approach would follow the historical separation of skill training in education where courses in reading, writing, and math are taught as prerequisites for science and liberal arts courses. In essence the proposal would be to include basic training in thinking strategies as a part of treatment and education curricula. This approach, which has been used successfully in the development of school-based study skills courses, would extend this notion to personal judgment and decision making skills.

Limitations

Several potential limitations should be noted. First, the sample represents youth in residential treatment for substance use problems and may not generalize to other treatment modalities or to youth in other settings. Second, the measurement timeframe used in this study reflects the aim of improving decision making within the orientation phase, or first 30 days of residential treatment. However, this period of time may be insufficient for detecting significant change. According to Bates and colleagues (Bates, Voelbel, Buckman, Labouvie, & Barry, 2005), cognitive impairments that can occur as a result of alcohol use may continue for up to 6 weeks after cessation. While the Bates study involved adult clients, their findings suggest that only modest gains in the early weeks of treatment may be feasible among individuals who report alcohol as a primary problem. Future studies should examine

whether initial changes are sustained, whether greater change occurs over longer periods of time, and the extent to which alcohol and drug use severity moderates change trajectories. Third, measures used in this study are self-reported by youth. Demand characteristics and timing of assessments could result in inaccurate reports. Incorporating behavioral observation (from clinicians or researchers) would yield richer and more accurate information regarding adolescents' comprehension and application of material presented in TRIP sessions.

Conclusion

Recent research suggests that adolescents can perform as well as adults on analytic reasoning tasks in controlled environments (Millstein & Halpern-Felsher, 2002), but in real life they heavily rely on rapid experiential (heuristic) based thinking that is impacted by proximal social motivational factors (Albert & Steinberg, 2011). The resulting distortions can interfere with accurate problem recognition, sufficient premeditation and effective problem solving. As a consequence, many adolescents engage in risky and unhealthy behavior. This study describes a manual-based intervention (TRIP) derived from an integrated theory of judgment and decision making that is designed to improve adolescent cognition and motivation. The results of the evaluation of TRIP indicate that it can have a positive impact on the thinking of adolescents in residential treatment facilities. This promising program is easy to implement in group settings and is well-received by counselors and adolescent clients. With slight modifications, TRIP can be used in a variety of settings including those focused on prevention and education.

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Table 1

Sample Demographics

	Participants (<i>N</i> = 519) <i>n</i> (% of Sample)	SOP (<i>n</i> = 281) <i>n</i> (% of SOP)	TRIP (<i>n</i> = 238) <i>n</i> (% of TRIP)
Gender			
Males	327 (63)	175 (62)	152 (64)
Females	192 (37)	106 (38)	86 (36)
Race			
Hispanic	276 (53)	148 (53)	128 (54)
Caucasian	136 (26)	62 (22)	74 (31)
Multiracial	53 (10)	34 (12)	19 (8)
African American	54 (5)	21 (7)	7 (3)
Age Group			
16 and older	320 (62)	173 (62)	147 (62)
15 and under	199 (38)	108 (38)	91 (38)
Prior Treatment Episodes			
Prior Treatment	342 (66)	182 (65)	160 (67)
No Prior Treatment	177 (34)	99 (35)	78 (33)
Drug Use Severity			
High Severity	372 (72)	205 (73)	167 (70)
Low Severity	147 (28)	76 (27)	71 (30)
Juvenile Justice Involved			
Involved	308 (59)	162 (58)	146 (61)
Non-Involved	211 (41)	119 (42)	92 (39)
Frequency of Drug Use			
Marijuana/Hashish			
Daily Use	289 (56)	158 (56)	131 (56)
Weekly Use	90 (17)	46 (16)	44 (19)
Alcohol			
Daily Use	41 (8)	24 (9)	17 (7)
Weekly Use	100 (19)	55 (20)	45 (19)
Cocaine (by itself)			
Daily Use	27 (5)	15 (5)	12 (5)
Weekly Use	30 (6)	15 (5)	15 (6)
Methamphetamines			
Daily Use	22 (4)	14 (5)	8 (4)
Weekly Use	25 (5)	6 (2)	19 (8)

Table 2

Factor Structure of TRIP-specific Knowledge and Satisfaction Scales

TRIP Knowledge Form Item	Factor Loading
Self-Awareness	
Lately, I am able to look at my decisions more clearly.	.63
Lately, I feel like I understand myself better.	.62
It helps me to think about how another person might see things.	.54
Lately, I have learned more about how my brain works.	.52
Lately, I've learned how to change my thinking.	.47
Lately, I have been rehearsing how to handle different situations.	.46
I try to see the risks before I do something.	.44
Strategy Use	
Things are easier to understand if they're drawn out or "mapped."	.60
When I'm overloaded with information, it helps to take notes or write/draw things out.	.58
Drawing, writing, or mapping my thoughts helps me understand a problem better.	.56
Lately, I have been making notes (lists) to help me remember things.	.53
Lately, I draw or map out my choices before making an important decision.	.51
Lately, I have come up with reminders to help me stay on track.	.46
Positive Approach	
I say positive things to myself to get me through tough times (e.g., "Calm down and relax").	.67
Lately, I have been talking to myself in a more positive way.	.67
Lately, I have been making plans for a positive future.	.57
TRIP Satisfaction Form Item	Factor Loading
Helpful	
TRIP sessions helped me understand myself better.	.83
TRIP sessions helped me understand other people better.	.82
TRIP sessions helped me to be more hopeful about my life.	.78
TRIP sessions made me want to make positive changes in my life.	.78
TRIP sessions kept my attention.	.70
TRIP sessions gave me something to look forward to.	.69
TRIP sessions helped me with my problems.	.69
I will use most of what I learned in TRIP.	.67
TRIP sessions made me want to stay in treatment.	.67
Engaging	
TRIP sessions were enjoyable.	.72
I would recommend TRIP to others.	.69
I felt comfortable speaking up during the TRIP sessions.	.62
Overall, the people in my groups got a lot out of TRIP.	.46

Table 3

General Thinking Means over Time by Group

	TRIP (n = 247)		SOP (n = 297)		Main Effects		Main Effects		Gp X Gn Interact	Interact with Time
	Time 1	Time 2	Time 1	Time 2	Time 1	Time 2	Time 1	Time 2		
	M (SD)	M (SD)	M (SD)	M (SD)	Group	Gender	Group	Gender		
Decision Making	33.14 (7.2)	36.58 (6.6)	32.86 (6.6)	34.63 (6.7)	ns	*	**	**	ns	Gp ^{**a}
Premeditation	31.22 (8.1)	33.91 (7.2)	30.25 (8.1)	32.86 (7.0)	ns	***	ns	***	†	ns ^b

^a All clients improved over time (p .0001); other interactions with Time were non-significant.^b All clients improved over time (p .0001); all interactions with Time were non-significant.† $p < .10$;* p .05;** p .01;*** p .001

Gp = Group; Gn = Gender

Table 4

General Thinking Means over Time by Group and Gender

	TRIP Group			
	Males (n = 158)		Females (n = 89)	
	Time 1	Time 2	Time 1	Time 2
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Decision Making	33.96 (7.2)	37.52 (6.3)	31.70 (6.9)	34.93 (6.9)
Premeditation	32.50 (7.9)	35.04 (7.0)	28.95 (7.9)	31.91 (7.1)

	SOP Group			
	Males (n = 182)		Females (n=115)	
	Time 1	Time 2	Time 1	Time 2
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Decision Making	33.20 (6.5)	35.12 (6.5)	32.33 (6.8)	33.85 (7.1)
Premeditation	30.84 (8.3)	33.37 (6.8)	29.31 (7.6)	32.05 (7.2)

Table 5

TRIP Means over Time by Gender (N=239)

	Males (<i>n</i> = 154)		Females (<i>n</i> = 85)		Total Sample (N = 239)	
	Time 1	Time 2	Time 1	Time 2	Time 1	Time 2
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)
Self Awareness	34.71 (7.8)	40.36 (6.8)	33.18 (7.5)	37.33 (7.0)	34.17 (7.7)	39.28 (7.0)
Strategy Use *	30.41 (7.1)	35.05 (7.5)	30.58 (7.1)	32.99 (7.5)	30.47 (7.1)	34.32 (7.5)
Positive Approach	37.79 (9.1)	41.65 (7.8)	35.41 (9.4)	39.53 (7.8)	36.95 (9.3)	40.89 (7.9)
Recognizing Drug Use Consequences *	36.85 (8.7)	42.79 (7.6)	37.62 (7.7)	40.97 (8.2)	37.12 (8.3)	42.14 (7.5)

Note: All clients improved over time ($p < .0001$)* Significant Gender x Time interaction ($p < .05$)