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Motivational interviewing with adolescents and young adults for drug-related problems

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Abstract: This article reviews studies of brief motivational interviewing (MI) interventions applied to adolescents (ages 13 to 18 years) and young adults (ages 19 to 25 years) using alcohol or other psychoactive substances. An overview of the principles of MI is provided followed by a review of 17 clinical studies reported in the literature. This review revealed mixed findings for the efficacy of brief MI among these populations. However, in 29% of the studies (5 of 17), there was a clear advantage of the brief MI demonstrated compared to standard care or other programming. Components common to successful brief MI interventions included one-on-one sessions and feedback on substance use compared to norms. Interviewer empathy has been shown to be a key component in studies with adults, but this was not measured in a standardized manner across the current studies. The studies reviewed here indicate that brief MI might be effective among these populations, but the key components necessary for successful MI interventions have not been fully identified.

Keywords: Substance use, adolescents, young adults, motivational interviewing, brief interventions, USA

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INTRODUCTION

Motivational interviewing (MI) was developed through practical experience in treating problem drinkers and through a number of clinical trials that demonstrated the efficacy of a brief intervention (1). Conceptually, motivational interviewing is a style of counseling rather than a defined set of techniques (2). An effective counselor exhibits therapeutic empathy, expects the interviewee to take personal responsibility for change, and aids in strengthening the interviewee's self-efficacy for behavior change (1,2). The first step in MI is to establish motivation to change by helping the interviewee identify discrepancies between the current situation and future goals. The interviewer helps the interviewee address ambivalence towards behavior change and any lack of confidence in the ability to change. The second step in the process is to build upon a commitment to change.

Rollnick et al (3) describe two brief versions of motivational interviewing sometimes referred to as adaptations of motivational interviewing (AMIs) including brief advice and behavior change counseling. Brief advice was adapted for use by those with limited time (5-15

minutes) available to provide counseling in opportunistic settings where the interviewee might not be seeking advice. In this situation, the interviewer provides expert advice in a respectful manner while the interviewee is a relatively passive participant. Behavior change counseling (BCC) uses more of the techniques of MI than is used during the brief advice intervention (3). The sessions are typically 5 to 30 minutes in length, and the interviewee is more actively involved in the discussion.

There have been several reviews of MI studies that have included a wide range of age groups. Noonan and Moyers (4) reviewed nine clinical trials that used AMIs with alcohol abusing populations and two clinical trials with drug abusers and reported that the efficacy of AMIs was statistically significant in 9 of the 11 trials. Dunn et al (5) examined 29 clinical trials and showed that the AMIs' effects were statistically significant among alcohol abusing populations. Burke et al (6) reviewed 26 clinical trials that used AMIs and reported strong support for the use of AMIs in alcohol treatment with statistically significant, positive results for 11 of 12 trials targeting alcohol use. Burke et al (7) examined 30 clinical trials, and they found that 11 of the 30 trials produced effect sizes between the pretest and posttest that were significantly greater than zero for alcohol, drug addiction, and diet and exercise for the AMI groups. Tait and Hulse (8) examined 11 clinical studies that included 8 AMIs with adolescents, and they found that brief interventions for alcohol had small but positive effect sizes. Many of these reviews did not consider the age of the participants in their analyses, and this was probably due to the fact that more studies have been conducted with adults than with younger age groups. The present authors are interested in the effectiveness of MI and AMIs when applied to adolescents and young adults.

METHODS

A literature search for studies using MI or AMIs included the use of PsycINFO, Medline, and references cited in various articles and web sites related to MI. The literature search covered the period from 1983, when William Miller first started publishing on the MI method (1), through March 2005, and the following search terms were used: 'motivational interviewing', 'brief interventions', 'harm reduction', 'alcohol', 'substance abuse', 'adolescents', and 'young adults'. The studies were limited to those dealing with alcohol, tobacco, and other substances, and to English language articles. The age groups included adolescents (13 to 18 years) and young adults (19 to 25). All studies conducted with college populations were included although the age groups might have exceeded 25 years in some cases. This review could not be limited to adolescents due to the small number of relevant studies for adolescents.

RESULTS

The authors located journal articles that reported on 17 clinical trials using some form of MI (see Table 1). These studies included four trials on multiple substance abuse, nine on alcohol use, three on tobacco use, and one on injury-related behaviors such as drinking and driving. Nine of the studies involved adolescents with a mean age of 18 or less, and the remaining eight involved young adults. Eight of the studies were conducted on college campuses, five recruited participants from hospital emergency rooms or outpatient clinics, two involved outpatients from a substance abuse clinic, one recruited from a psychiatric hospital, and one study included students from schools in London (non-traditional

Table 1. *Summary of Studies Using Adaptations of Motivational Interviewing with Adolescents and Young Adults*

	Sample Size	Drug	Population/Setting	Design	Follow-Up
Agostinelli, Brown & Miller (22)	23	Alcohol	College students at UNM campus; 48% female (pilot study)	Random assignment to (a) receive feedback by mail or (b) receive no feedback on a screening inventory until the 6 week follow-up	6 weeks
Baer, Marlatt, Kivlahan, Fromme et al (20)	134	Alcohol	College students attending UW (mean age=21.2; 52% female)	Random assignment to (a) classroom groups that met 6 times for 90 minutes, (b) self-help group assigned 6 readings, or (c) brief 60 minute MI session.	3, 6, 12, and 24 months
Baer, et al. (12); Marlatt et al (31); Roberts et al (32)	328	Alcohol	College students attending UW from 1990-1994 (age at baseline < 19; 54% female)	Random assignment to (a) brief MI or (b) no treatment. Additional students selected for a (c) natural history group	1, 2, 3, and 4 years.
Battjes et al (15)	194	Various Drugs	Youth seeking admission to an adolescent outpatient substance abuse treatment program (mean age = 15.96; 15.5% female)	Counter-balanced design with assignment to (a) one 75 minute MI session, or (b) one brief counseling overview. After one of these pretreatments, the participants attended weekly group-based counseling for 20 weeks.	6 and 12 months
Borsari & Carey (13)	60	Alcohol	College students (mean age= 18.6; 57% female)	Randomized assignment to (a) brief MI or (b) no treatment control.	6 weeks
Brown et al (17)	191	Tobacco	Psychiatric hospital patients (age range from 13-17; 62% female)	Randomized assignment to (a) two MI 45 minutes sessions or (b) one brief advice 5-10 minute session	12 months

Table 1 (continued). *Summary of Studies Using Adaptations of Motivational Interviewing with Adolescents and Young Adults*

	Sample Size	Drug	Population/Setting	Design	Follow-Up
Colby et al (18)	40	Tobacco	Youth at hospital ER or outpatient clinic (age range from 14-17; 58% female)	Randomized assignment to (a) one MI 30 minute session or (b) one brief advice 5 minute session	3 months
Colby et al (14)	85	Tobacco	Youth at a northeast urban hospital outpatient clinic or ER (mean age=16.3; 71% female)	Randomized assignment to (a) brief advice in 5 minutes or (b) MI in 35 minutes.	6 months
Handmaker, Miller, & Manicke (19)	34	Alcohol	Pregnant college students at UNM obstetric clinic (mean age=24; 100% female)	Randomized assignment to (a) one hour MI session or (b) written info on risks of drinking during pregnancy	2 months
Hungerford et al (16)	2067	Alcohol	Rural university hospital ER (age ranges 18-20, 34%, 21-29, 55%, and 30-39, 11%; 54% female)	Treatment group only using several techniques including brief MI (14 minutes average intervention time).	3 months
Johnston, Rivara, Droesch, Dunn & Copass (11)	630	Injury-related behaviors	Youth at an urban hospital ER (mean age=16.4; 35% female)	Random assignment to (a) 20 minute BCC session or (b) standard medical care control group	6 months
Lawendowski (24)	77	Various Drugs	Adolescents at outpatient substance abuse clinic (mean age=16.8; 22% female)	Random assignment to (a) one brief MI session of 30-60 min plus standard care or (b) standard care without MI.	3 months
McCambridge & Strang (25, 26)	200	Various Drugs	Youth ranging in age from 16-20 attending further education colleges, London, UK; 46% female	Random assignment to (a) one MI session up to 60 minutes or (b) no intervention "education as usual".	3 months
Monti et al (10)	94	Alcohol	Youth in hospital ER (mean age=18.4; 36% female)	Random assignment to (a) single 30 to 40 minute MI or (b) standard care.	6 months

Mullins, Suarez, Ondersma & Page (9)	71	Various Drugs	Females (mean age=27.1) involved in compulsory University treatment program for women who used drugs while pregnant	Random assignment to (a) three individual 1 hour MI sessions or (b) educational videos and home visit. All participants attended compulsory drug treatment after experimental interventions.	8 weeks
Murphy et al (21)	54	Alcohol	College students (mean age 19.9; 69% females)	Random assignment to (a) personalized drinking feedback (PDF) plus single 30 to 50 minutes MI session or (b) PDF only.	6 months
Walters, Bennett & Miller (23)	37	Alcohol	College students attending UNM (mean age=19.7; 40% female)	Random assignment to (a) single 2 hour group information session plus mailed feedback (DCU) on their drinking, (b) mailed feedback (DCU), or (c) no treatment.	6 weeks

Table 2. *Summary of Results for Studies Using Adaptations of Motivational Interviewing among Adolescents and Young Adults*

Studies with Adolescent Populations	Drugs	MI Intervention	Findings	Effect sizes/Statistics
Battjes et al (15)	Various Drugs	Brief MI	No main effect of pretreatment type when comparing brief MI versus a brief counseling overview.	Main effect of pretreatment was not significant.
Brown et al (17)	Tobacco	Brief MI	No main effect for MI on smoking cessation compared to brief advice. Modest positive effect of MI on self-efficacy regarding ability to quit for those initially low in intentions to quit.	No difference in mean length in days (SD) of longest quit attempt: MI group: 48.2 (52.7) Brief advice group: 60.9 (75.5)

Table 2 (continued). *Summary of Results for Studies Using Adaptations of Motivational Interviewing among Adolescents and Young Adults*

Studies with Adolescent Populations	Drugs	MI Intervention	Findings	Effect sizes/Statistics
Colby et al (18)	Tobacco	Brief MI	Participants in both groups made serious attempts to quit. Significant reductions in smoking and dependence were found. There were no significant group main effects	Persons attempting to quit: MI group = 72% BA group = 60% Mean smoking days per week for combined groups: baseline = 6.27 (1.76), follow-up = 5.32 (2.76). Abstinence effect size in favor of MI was 0.28 (ns)
Colby et al. (14)	Tobacco	Brief MI	Both groups reported less smoking at follow-up and had lower cotinine. MI group had more self-reported abstainers, but the cotinine analyses showed no difference between groups.	Combined group average cigarettes smoked per day: baseline = 10.0 (6.4), follow-up = 6.1 (4.3). Seven day abstinence MI group = 23%, BA group = 3% ($p<.05$). Cotinine 9% vs. 2% (ns).
Johnston, Rivara, Droesch, Dunn, & Copass (11)	Drug-related Injuries	Behavior Change Counseling (BCC)	BCC group significantly increased seat belt and bicycle helmet use. No effect on binge drinking, driving after drinking, riding with an impaired driver, or carrying a weapon. No effect on risk of re-injury.	Relative Risk MI group vs. Control Seatbelt=1.49(1.14,1.95) Bicycle helmet =16.2(2.22,118.4) Binge drinking =0.81(0.48,1.52) Drinking and driving =1.40(0.88,2.23)
Lawendowski (24)	Various drugs	Brief MI	Increased abstinence. Reduced heavy use. Increased outpatient treatment attendance.	Percent days abstinent ES=0.61 Total days using drugs ES=0.79 Treatment sessions attended ES=0.59

McCambridge & Strang (25, 26)	Various Drugs	Brief MI	Reduced use of alcohol, marijuana, & cigarettes. Some increase in perceived risk and harm.	Alcohol ES=0.34 (0.09-0.59) Marijuana ES=0.75 (0.45-1.00) Cigarettes ES=0.37 (0.15-0.60)
Studies with Early Adult Populations				
Agostinelli, Brown, & Miller (22)	Alcohol	Shortened Drinkers' Check Up	Reduced weekly number of drinks consumed.	Consumption main group effect: $F(1,21)=6.92$, $p=.016$, ES=1.14
Baer Marlatt, Kivlahan, Fromme et al (20)	Alcohol	Emphasized Alcohol Skills Training Program	Reduced drinking from baseline in classroom and brief MI groups with no difference between groups. Reductions at posttest were maintained for 24 months. Self-help group dropped from analyses	Reduced drinking for combined groups: Wilks's $\lambda=.37$, $F(9,60)=11.46$, $p<.0001$
Baer et al (12); Marlatt et al (31); Roberts et al (32)	Alcohol	BASICS program	Reduced consequences for Brief MI vs. control. Quantity decreased for both MI and control groups with no difference between the groups No difference in frequency of use between MI and controls. Quantity, frequency, and consequences of drinking did not change in the natural history control group over time.	Prevention group by time interaction for negative consequences over 4 years with the MI group showing greater reduction especially at year 1: ($p=.01$)
Borsari & Carey (13)	Alcohol	BASICS	Reduced alcohol consumption and binging in the treatment group.	Weekly drinking: ES=0.21 Times consuming alcohol per month: ES=0.28 Binge drinking: ES=0.12

Table 2 (continued). *Summary of Results for Studies Using Adaptations of Motivational Interviewing among Adolescents and Young Adults*

Studies with Early Adult Populations	Drugs	MI Intervention	Findings	Effect sizes/Statistics
Handmaker, Miller, & Manicke (19)	Alcohol	Brief MI	Both groups showed significant reduction in consumption, but there was no difference between the groups. For women with highest level of self-reported BAC in early pregnancy, the MI group showed significantly greater reduction in consumption.	Consumption effect size: ES=0.40 for the control group. ES=0.46 for the MI group.
Hungerford et al (16)	Alcohol	Screening and Brief Intervention	Alcohol consumption scores decreased significantly from baseline to follow-up. Alcohol-related harm and dependence also decreased significantly.	Mean consumption decrease = 2.6 (2.3, 2.9). Mean alcohol-related harm decrease = 1.4 (1.1, 1.6). Mean dependence-symptom scores decrease = 0.9 (0.7, 1.1).
Monti et al (10)	Alcohol	Brief MI	No differences in drinking frequencies. Reduced drinking and driving. Fewer injuries or problems related to use. Fewer moving violations.	Odds of drinking and driving for the control vs. MI, OR=3.92(1.21-12.72) Odds of alcohol injury for the control vs. MI, OR=3.94(1.45-10.74)
Mullins, Suarez, Ondersma, & Page (9)	Various Drugs	Brief MI	No main effects for condition on treatment engagement or retention in the compulsory treatment program. No main effect for condition on urine screens.	Sessions attended F(1,69)=.34, p=.56 Negative urine test F(1,64)=.37, p=.55

Murphy et al (21)	Alcohol	Brief MI and/or Personalized Drinking Feedback	Reduced drinking for both groups. No difference between groups.	Feedback only group, ES=0.42 and feedback plus MI group, ES=0.48 across three drinking measures
Walters, Bennett, & Miller (23)	Alcohol	MI modified for groups.	Reduced drinking in feedback only group compared to control and group session plus feedback.	Reduce drinking for feedback only group, ES=1.01; feedback plus class group, ES=0.60; and control group, ES=0.04

educational and training institutions for 16 to 20 year old students). The studies varied in size. Ten of the studies included 100 or fewer participants and 7 studies included more than 100 participants. White participants were the majority in 13 of the 17 studies, Latinos were the majority in 2 studies, Blacks were the majority in one study, and one study did not report race. Female participation in the studies ranged from 22% to 71% except for two studies that recruited pregnant women only.

A number of different experimental designs were used in the clinical trials (see Table 1). For those studies with individual, one-on-one interviews, thirteen of the studies implemented one brief MI session lasting from 20 to 75 minutes (approximate mean = 45 minutes), one study included two MI sessions at 45 minutes each, and one study included three MI sessions at 60 minutes each. In addition, one study implemented a group MI session, and one study simply mailed feedback on alcohol use. Sixteen of the studies incorporated some type of control group: eight studies included standard care controls and eight studies included an alternative intervention for the control group. One study included a brief MI treatment group only in a pretest-posttest design. The follow-up time periods ranged from six weeks to four years. Treatment adherence by the MI interviewer was monitored in eight of the trials. Two studies used video tapes to code a portion of the sessions (9, 10), one study used audio tapes to code a portion of the sessions (11), and the other five studies used questionnaires to obtain an evaluation of each session by the interviewer and/or interviewee (12-16).

The results for the various trials were mixed for the outcomes related to quantity or frequency of substance use (see Table 2). Four studies found no MI treatment effects on outcomes for substance use compared to standard care controls (10-12, 15). However, there were significant findings for other outcomes related to substance use in three of these four studies. One study with adolescents found no effect for a brief MI session for the reduction of alcohol-related risk behaviors after six months, although there was a significant improvement for seat belt and bicycle helmet use among the MI participants (11). A second study among older adolescents found no effect for alcohol consumption between the MI and the standard care group after 6 months, although there was a significant reduction in drinking and driving and fewer reported alcohol-related problems among the MI participants (10). A third study found that both the MI group and standard care group of college students reduced the quantity of alcohol use over the four-year study with no main effect across the groups, but there was a reduction in consequences for the brief MI group compared to the control (12). The fourth study found no significant main effect for a brief MI treatment compared to a brief counseling overview administered prior to a 20-week group counseling intervention (15).

Eight studies found that MI interventions generally reduced substance use, but there was no difference between brief MI and an alternate intervention such as brief advice for seven of those studies (9,14,16-21). Three studies with adolescents on tobacco use compared brief MI to brief advice and found that both groups reported less smoking or made significant attempts to quit smoking after 3 to 6 months, but the studies found no significant differences between the treatment groups (14,17,18). A study on alcohol use among college students found that both the MI group and the personalized feedback only group reduced alcohol use after 6 months, but there was no difference between the groups (21). A pilot study with pregnant

women who used alcohol found that there was a significant reduction in alcohol use after 2 months for both treatment groups including the brief MI group and the group receiving written information on the risks of using alcohol during pregnancy, but there was no main effect across treatment groups (19). In another study with pregnant women, there were no effects for the MI group or the home visit control group in self-reported substance use or urine screens over 8 weeks, but this program was compulsory for these women (9). A study on a college campus found that a brief MI session was equivalent to 6 each 90-minute classroom sessions in reducing alcohol consumption over 24 months (20). There was a significant reduction in alcohol consumption for a study conducted with university hospital emergency department patients after 3 months, but there was no control group in this study (16).

There were two studies that examined the effects of providing only feedback on substance use by mail, which is technically not MI, but feedback is normally included in brief MI sessions (22,23). One study found a significant reduction in alcohol consumption after 6 weeks for a group of college students who received alcohol use feedback by mail when compared to a standard care group (22). Another study found that mailing feedback on alcohol use to college students significantly reduced drinking over 6 weeks when compared to a standard care group or a group that received the same feedback plus a classroom information session (23).

Three studies showed positive results for the MI group compared to a standard care group (13,24-26). One study with adolescents in school showed reductions in cigarette, alcohol, and cannabis use over 3 months for the MI group versus the standard care group (25,26). Another study with adolescents attending an outpatient clinic for drug use showed a significant increase in abstinence or reduced heavy use over 3 months when comparing the standard intervention to a brief MI as an add-on to the standard intervention sessions (24). One study on a college campus showed significant reductions in alcohol use over 6 weeks for the MI group versus the standard care group (13).

In summary, 29% of the studies (5 of 17) reviewed reported a significant reduction in substance use for brief MI groups including feedback only groups compared to standard care groups. In 47% (8 of 17) of the studies, there was no significant reduction in substance use for brief MI treatment groups compared to groups that received alternative treatments. However, four of these seven studies with no main effect between treatments showed significant reductions in substance use for both the MI group and the alternate treatment group. The brief MI treatment was not significantly different from standard care in 24% (4 of 17) of the studies in the reduction of substance use. These results were similar for adolescents and young adults.

DISCUSSION

This paper provides a review of 17 studies on brief MI conducted with adolescents or young adults. Findings are mixed in both age groups for the efficacy of MI in reducing substance use, particularly when MI is compared to alternative, brief interventions. Taken together however, the studies provide some support for an individualized intervention for adolescents and young adults, but it is not clear from these studies whether the intervention should be a brief MI, brief advice, or simply feedback on substance use (see also, 27).

Based upon the review of the various studies, certain components appear to be common in the effective brief interventions.

The successful interventions generally had some type of assessment and feedback on the level of substance use by the participant relative to a normative population (13,26). In general, these interventions also included an individualized, one-on-one session (13,26) although two studies (22,23) were successful by simply providing feedback through the mail for college students (possibly not applicable for younger populations, depending on whether they would read or could understand the material on their own). The length of the interventions ranged from a few minutes for brief advice (14,17) up to three each one-hour long MI sessions (9), but the length of session did not appear to be an important influence on reducing substance use in the studies reviewed here. Gender, age group, and setting also were not important in reducing substance use, although the data is limited to the studies reviewed. One study with pregnant women indicated that compulsory attendance might have a negative effect on brief MI interventions (9).

Findings from this review are limited for several reasons. First, there are a limited number of clinical trials with adolescents or young adults from which to draw inferences about the efficacy of brief interventions in these populations. Second, these studies varied in experimental design including the setting and control group treatment making it difficult to compare results across studies. Third, the competence of the interviewers could not be compared across the studies due to inconsistent measurement of this variable. In addition, it should be noted that all of the studies reviewed here are adaptations of MI and do not necessarily represent the full MI intervention described by Miller and Rollnick (2).

Future studies might want to address several outstanding issues. Although there is some support for the efficacy of brief MI style interventions, the length and content needed is unclear. Treatment adherence and interviewer attitude measures should be standardized in order to compare across studies (28,29). Brief advice and feedback only interventions appear to hold some promise and deserve further research with adolescents and young adults (18,21). Multiple MI sessions do not appear to be justified at the present time, but it might be important to conduct confirmatory studies.

Despite the mixed findings for brief MI and the need to elucidate key components associated with efficacy, this type of intervention may be one of the most promising approaches for high-risk adolescents and young adult populations who otherwise would not attend (or attend to) other types of early intervention that require multiple sessions or group interaction (30). Brief or adapted MI interventions could be a reasonable adjunct to school assistance programs, where students are entered into this intervention when learning or behavioral problems emerge but drug use is not yet a full-blown problem.

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BITS 'N PIECES

A cluster randomised intervention trial of asthma clubs to improve quality of life in primary school children: the School Care and Asthma Management Project (SCAMP)

Aim: To evaluate the effectiveness of a programme of asthma clubs in improving quality of life in primary school children with asthma. *Methods*: A cluster randomised intervention trial was undertaken in 22 primary schools within the urban area of south and east Belfast, Northern Ireland. Schools were randomised in pairs to immediate or delayed groups. The study subjects comprised 173 children aged 7–11 years whose parents had notified the school of their asthma diagnosis. Children attended school based weekly clubs over an 8 week period. The main outcome measures were the interview administered Paediatric Quality of Life Questionnaire scores, ranging from 1 (worst) to 7 (best), spirometry, and inhaler technique. *Results*: Over 15 weeks, small but non-significant improvements in the overall quality of life score (mean 0.20; 95% confidence interval (CI) –0.20 to 0.61) and in each of its three components, activity limitation (0.20; –0.43 to 0.84), symptoms (0.23; –0.23 to 0.70), and emotional function (0.17; –0.18 to 0.52), were observed in the immediate compared with the delayed group. Inhaler technique at week 16 was markedly better in the immediate group, with 56% having correct technique compared with 15% in the delayed group. No significant effect of the intervention on spirometry results could be demonstrated. *Conclusion*: This primary school based asthma education programme resulted in sustained improvements in inhaler technique, but changes in quality of life scores were not significant.

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