

Treatment Completion in a Brief Motivational Intervention in the Emergency Department: The Effect of Multiple Interventions and Therapists' Behavior

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Background: The aim of this study was to identify therapist behaviors during a brief motivational intervention (BMI) given to injured emergency department patients that predicted participant return for a second BMI session and 12-month alcohol-related outcomes.

Method: This was a secondary data analysis of a randomized controlled trial ($n = 539$) previously demonstrating that random assignment to a BMI and booster session resulted in a significant reduction of 12-month postintervention alcohol-related injuries and negative consequences relative to standard care.

Results: Participants who actually received 2 BMI sessions had significantly less alcohol-related negative consequences than those who received only 1 BMI session. Therapists who reported a higher focus on emotional support and low focus on participant drinking behaviors during the initial BMI session were more likely to have assigned participants return for the second BMI session.

Conclusion: The results of these secondary analyses show that compliance with a 2-session therapeutic intervention (BIB) predicted fewer negative alcohol-related consequences, and that therapists' supportive emotional emphasis during the first BMI session was important in predicting participants returning for the second MI session.

Key Words: Treatment Completion, Brief Motivational Intervention.

A SUBSTANTIAL NUMBER of the injured patients who go to the emergency department (ED) for treatment will have alcohol use issues and may be intoxicated at the time of treatment (Becker et al., 1995; Cherpitel, 1999; Freedland et al., 1993), and they are at risk from continuing to experience adverse health and psychosocial consequences (D'Onofrio et al., 2005; Dinh-Zarr et al., 2000; McDonald et al., 2004). As ED treatment presents a brief opportunity for the health-care professional to screen for and to address

patients' hazardous alcohol use, it is important that emergency-care professionals determine the most efficacious way to help individuals who may be amenable to changing their alcohol-related behaviors and reduce the likelihood of future negative consequences (Crawford et al., 2004; D'Onofrio et al., 2005). Brief motivational interviewing (BMI) is a therapeutic approach that has been employed to change patient behavior in a variety of clinical settings. This brief client-centered intervention focuses on helping patients identify behaviors that need to be changed, increased patient ambivalence, motivation, and planning for changing identified behaviors (Field et al., 2005; Miller and Rollnick, 2002).

A meta-analysis on the use of BMI in randomized clinical trials in primary care settings has demonstrated effectiveness in reducing alcohol consumption in patients when compared with standard care (Burke et al., 2003; Moyer et al., 2002; Rounsaville et al., 2001). A more recent review of the literature suggests that BMI is generally more effective than standard care in the ED for reducing hazardous alcohol use, such as binge drinking, and in reducing alcohol-related injuries and negative consequences (P. Nilsen et al., unpublished data).

However, treatment regimes such as BMI should not only demonstrate efficacy but also should provide an explanation of the mechanisms by which the treatment facilitates change in the patient (Rounsaville et al., 2001). In reviewing research on the treatment components for alcohol use, Miller (1985) concluded that therapist characteristics were seldom investigated as a predictor of patient motivation and treatment

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compliance (Miller, 1985). In explaining how treatments such as BMI work, it is important to understand what works by also looking at therapists' behaviors, rather than only focusing on the patient characteristics that moderate treatment.

This current investigation was conducted as a secondary analysis of data from a large-scale randomized clinical trial which demonstrated that injured ED patients, randomized into BMI with a booster BMI session, experienced better long-term outcomes than ED patients receiving standard care (SC), including reduced alcohol-related injuries and negative consequences (Longabaugh et al., 2001). Using an intention-to-treat model, the original study compared treatment effectiveness of injured ED patients ($n = 539$) randomization to: (1) SC ($n = 188$), (2) 1 session of BMI delivered in the ED setting (BI; $n = 182$), and (3) 2 sessions of BMI (BIB; $n = 169$) (one delivered in the ED and a later booster session delivered outside of the ED). In the original study, all recruited participants were at-risk drinkers by virtue of having a score of 8 or greater in the AUDIT, and/or having alcohol in their system at the time of injury or ED visit. The Institutional Review Board of the hospital and university approved the original research protocol.

The outcome data analyzed in the present paper were provided by those participants recruited into the study who were interviewed 12 months after their initial injury-related ED visit (84%). These follow-up interviews were conducted by research assistants who were blinded to participant group assignment. The original study demonstrated that those participants assigned to the BIB condition as compared with those assigned to the SC, had fewer alcohol-related injuries and negative consequences during the 12 months after treatment (Longabaugh et al., 2001). However, because only 68% of the participants assigned to the BIB condition actually received the second BMI session, it is important to examine why some participants did not complete the second BMI session and to determine if completion of the second BMI was important in predicting treatment outcomes. As participants were demonstrating a selection bias in deciding whether or not to return to complete the treatment assignment, it was important (1) to determine what effect that this lack of treatment completion had on participant outcomes and (2) to examine what therapists behaviors may have influenced the decisions of the participants to complete treatment, after we have ruled out competing theories of participant characteristics that were associated with treatment completion.

MATERIALS AND METHODS

Population

These secondary data analyses were based on the amount of BMI treatment that the participants actually received with the following groups compared: BI ($n = 173$) received 1 BMI session when randomly assigned to do so, BIB-2 ($n = 115$) received 2 sessions of BMI when randomly assigned to do so, and BIB-1 ($n = 54$) received only 1 session of BMI although they were randomized to receive 2 sessions. Study participants were primarily male (78%) and single (77%), and had an average age of 27 years ($SD = 9$ years). The majority of the participants were Caucasian (72%) with 10% describing themselves as African American/Black and 14% described themselves as Latino/Hispanic (Table 1).

Measures

The Drinker Inventory of Consequences. The drinker inventory of consequences (DrInC) is a 45-item self-report questionnaire that asks the participants about negative consequences experienced from drinking (Miller et al., 1995). The Lifetime version of the DrInC was administered at baseline. At 12-month follow-up, the participant was asked how often he/she had experienced each of these same consequences in the past year (0 = none, 3 = daily or almost daily). The total alcohol-related negative consequences were a primary dependent variable.

Revised Injury Behavior Checklist. The injury behavior checklist (IBC) is part of a comprehensive health interview called the Adolescent Health Status Instrument (AHSI) (Starfield, 1991). It was revised to include new items designed to measure alcohol involvement during injuries. The participant recorded the number of times each of 18 different kinds of injuries occurred during the past year, if a doctor treated the injury, and if alcohol was consumed within a 2-hour period prior to the injury. The IBC was administered at baseline and at 12-month follow-up. Alcohol-related injuries were a primary dependent variable.

Therapist Rating of Intervention Implementation. At the end of each intervention session, each of the 8 therapists who administered the BMI sessions to assigned participants completed this 16-item self-report questionnaire rating the extent to which they enacted various behaviors hypothesized to be conducive to BMI. Each question was rated on a 5-point scale that measured the therapist use of the 16 behaviors, with responses ranging from "Not at all" (1) to "Extensively" (5). The overall questionnaire was excerpted from more extensive instruments measuring helping alliance and adherence to MI principles (Miller and Rollnick, 2002). The items used in this questionnaire are given in Table 2.

BMI Intervention

After recruitment and baseline assessment, all study participants ($n = 539$) were randomized into the 3 study conditions: control,

Table 1. Baseline Characteristics of Participants by Received Treatment Condition

Characteristic	BI ($n = 173$)	BIB-2 ($n = 115$)	BIB-1 ($n = 54$)	Statistic (F)
Age	M = 27.5 (SD = 8.4)	M = 28.6 (SD = 9.1)	M = 26.2 (SD = 9.7)	$F(2,342) = 0.79, p = 0.32$
Years of education	M = 12.1 (SD = 2.3)	M = 12.27 (SD = 2.6)	M = 12.14 (SD = 2.2)	$F(2,339) = 0.37, p = 0.54$
Blood alcohol level at consent	M = 0.051 (SD = 0.07)	M = 0.045 (SD = 0.08)	M = 0.038 (SD = 0.05)	$F(2,342) = 0.21, p = 0.65$
AUDIT score	M = 12.12 (SD = 6.14)	M = 13.01 (SD = 7.67)	M = 13.19 (SD = 6.61)	$F(2,338) = 0.88, p = 0.51$
DrInC score (log)	M = 2.64 (SD = 0.77)	M = 2.51 (SD = 0.83)	M = 2.52 (SD = 0.76)	$F(2,336) = 1.64, p = 0.27$
IBC-r score (reciprocal)	M = 0.37 (SD = 0.33)	M = 0.38 (SD = 0.34)	M = 0.3 (SD = 0.26)	$F(2,336) = 0.23, p = 0.63$

IBC, injury behavior checklist; DrInC, drinker inventory of consequences.

Table 2. Factor Loadings for Varimax 3-Factor Solution

Item	Factor 1 Focus on drinking Loading	Factor 2 Focus on hazardous behavior Loading	Factor 3 Focus on emotions Loading
1. To what extent did you express empathy?	0	-0.01	0.83
2. To what extent did you employ discrepancy?	0.56	0.30	0.15
3. To what extent did you avoid argumentation?	0.54	0.22	0.23
4. To what extent did you support self-efficacy or emphasize personal responsibility for change?	0.21	0.01	0.78
5. To what extent did you attempt to increase the participants' awareness or focus on his/her ambivalence about changing drinking?	0.72	0.15	0.001
6. To what extent did you attempt to increase the participants' awareness or focus on his/her ambivalence about changing drinking related hazardous behavior?	0.68	0.40	0.01
7. To what extent did you attempt to increase the participants' awareness or focus on his/her ambivalence about changing hazardous behavior other than drinking?	0.22	0.87	0.05
8. To what extent did you provide feedback about the participants' drinking to the participants?	0.66	0	0.21
9. To what extent did you provide feedback to the participants about the relationship of drinking to injury?	0.66	0	0.21
10. To what extent did you provide feedback about the relationship of drinking to other negative consequences that the participants may have experienced?	0.54	0.01	0
11. To what extent did you attempt to elicit self-motivational statements from the participants regarding changing his/her drinking?	0.75	0.12	0.38
12. To what extent did you attempt to elicit self-motivational statements from the participants regarding changing other hazardous behaviors besides drinking?	0.17	0.88	0.20
13. To what extent did you attempt to elicit self-motivational statements from the participants regarding changing other hazardous behaviors while drinking?	0.70	0.45	0.11
14. To what extent did you attempt to encourage the client to commit to take concrete steps to make a change in their drinking or formulate a specific plan for making changes?	0.75	0.11	0.11
15. To what extent did you attempt to encourage the client to commit to take concrete steps to make a change in their hazardous behaviors other than drinking or formulate a specific plan for making changes?	0.16	0.86	0.16
16. To what extent did you attempt to encourage the client to commit to take concrete steps to make a change in their drinking when engaging in hazardous behaviors or formulate a specific plan for making changes?	0.66	0.51	0.01

Values in bold represent items associated with factors.

1 session of BMI and 2 session of BMI. The counselor conducted the assessment and randomization. Prior to randomization to BMI or SC neither the participant nor the counselor knew what treatment assignment the participant would receive. For patients receiving BI, a second randomization occurred at the completion of the first BMI session to determine whether they were to be scheduled for a booster session (BIB). However, as with most randomized controlled trial (RCT) studies it was not possible to randomize the therapist to the type of treatment that they would give to the participant. Therapists assigned to predetermined shifts initiated all recruitment, assessments, and interventions for patients meeting eligibility criteria during their shift.

The sessions offered to participants in the BI and BIB conditions used the principles of BMI to allow the participant to examine discrepancies between the reported consequences of drinking and the positive value that the participant placed on drinking. Important in the BMI session was the development of a change plan in which the participant would detail areas of his/her life that they wanted to change, in particular, change related to alcohol use was the usual focus. The change plans were the joint work of the therapist and participant. The therapists were trained in MI, and most were masters or PhD level clinicians. The 2 licensed clinical psychologists who

provided weekly clinical supervision to the therapists reviewed a sample of videotaped therapy sessions prior to supervision meetings to monitor treatment fidelity and clinical practice issues.

ANALYSIS AND RESULTS

To determine if more treatment predicted improved 12-month outcomes, regression analyses were conducted. Directional tests of significance were employed as it was hypothesized that receiving more BI treatment would predict to less alcohol-related injuries and negative consequences. Participants were grouped according to the treatment that they had received (BI, BIB-2, or BIB-1). The transformed 12-month IBC and DrInC scores were used as the predictors, and baseline IBC and DrInC scores were entered first into the regression models as covariates.

We found that participants in the BIB-2 group had significantly better 12-month DrInC scores (i.e., fewer

reported alcohol-related negative consequences) ($M = 2.17$, $SD = 1.17$) than participants in the BI group ($M = 2.36$, $SD = 1.2$) [$F(2,225) = 3.57$; $p = 0.03$]. Participants in the BIB-2 also had significantly better 12-month DrInC scores than participants in the BIB-1 group ($M = 2.48$, $SD = 1.13$) [$F(2,127) = 3.18$; $p = 0.04$]. There was no significant difference in 12-month DrInC score between those in the BIB-1 and BI participants [$F(2,171) = 0.31$, $p = 0.27$]. The amount of treatment received was not a significant predictor of 12-month alcohol-related injuries (IBC scores) across these 3 groups.

To identify therapist behaviors that predicted participants return for the second BMI session, a principal components analysis was conducted on the self-reported ratings of the 8 therapists' behaviors (therapist rating of intervention implementation) during the first BMI session ($n = 326$). Using Varimax rotation, 3 factors were identified from the retained 13 items: focus on drinking (Factor 1), focus on other hazardous behaviors (Factor 2), and focus on emotions (Factor 3). Internal consistencies of the factors were 0.88 for Factor 1, 0.90 for Factor 2, and 0.60 for Factor 3.

Further analyses were conducted on differences between the therapists report of their own behaviors during the initial BMI session and participant attendance at the second BMI session. There were sizable differences between therapists in the number of participants they recruited and conducted BMI sessions with (due to differences in the number of shifts therapists worked). To provide an adequate number of patient sessions per therapist, we analyzed only the self-reported behaviors of 3 of the 8 therapists who conducted the interventions. Each had delivered treatment to at least 10% of the participants randomized to receive BMI (These 3 therapists delivered 64% of the BMI's).

To examine differences between the 3 therapists in their self-reported use of the 3 therapist behavior factors, 3 one-way ANOVA's with follow-up Tukey tests were conducted. Results of this analysis showed that the therapist who had significantly greater participant retention rates self-reported significantly lower focus on drinking behavior (Factor 1) and a significantly greater focus on emotional support (Factor 3) than the other 2 therapists [$F(2, 208) = 116$, $p < .001$; $F(2, 208) = 39$, $p < .001$] during the initial BMI session. Although participant attendance at the second BMI session predicted significantly less 12-month alcohol-related consequences, an interaction between therapist assignment and participant attendance at the second BMI session did not predict either the 12-month DrInC or IBC scores.

DISCUSSION

These findings support the hypothesis that reduced 12-month alcohol-related negative consequences result from attending 2 sessions of BMI. Receiving 2 sessions of BMI did not predict lower alcohol-related injuries at 12 months postintervention; however a trend towards fewer injuries among those who received 2 BMI sessions in comparison with the other treatments received was noted. The protocol used in the

original study encouraged therapists to develop a change plan with all participants during the first BMI session in the ED. For those participants who had the opportunity to return for a booster session, the intervening time allowed them to experience how well their change plan was working and to identify obstacles to change and bring these observations and experiences to the second BMI session. It would be of interest to determine in future analyses if the quality of the change plan was related to the factors identified in the self-reported behavior of the therapists, particularly how participants' decisions to make behavior changes were influenced by the therapist's focus during the baseline BMI session.

More importantly, we also found that the therapist behaviors in the first BMI session influenced the likelihood of the participant returning to complete the assigned BMI treatment. These analyses suggest that after the initial BMI session, participants assigned to receive a second BMI session returned more often when the therapist established an emotionally supportive relationship, and that directly focusing on the participant's drinking behavior resulted in a lower participant return rate. Our findings, that an interaction between therapist assignment alone and attendance at the second session did not significantly predict 12 month outcomes, suggests that it was not the presence of an individual therapist that predicted outcomes, but rather the behavior exhibited by the therapist resulted in better second BMI attendance and that this second session was important for treatment effect.

This may be an important issue for BMI counseling when the intervention is brief and time limited. Establishing a rapport with the participant in the first BMI session rather than overly focusing on problematic behavior may allow the therapist a greater opportunity to complete a therapeutic intervention with the participant at a later session. Early work in the field of treatment effectiveness demonstrated that "appropriate empathy" by the therapist accounted for most of the variance in reducing client alcohol intake (Miller et al., 1980). In later work Miller defined empathy operationally in terms of the supportiveness, respect and commitment shown by the therapist to the client (Miller, 1985). The increased use of emotional support shown by therapists in the first BMI may be an important component of empathy.

It could also be argued that participant characteristics influenced the behavior of therapists and the ability of the therapist to establish a therapeutic rapport with the participant. To test such a competing hypothesis, analysis was conducted on the baseline characteristics of the participants across the two groups of interest (i.e., those who attended 2 BMI sessions and those who attended only one although assigned to receive 2 BMI sessions). There were no significant differences across these groups on age, baseline DrInC, IBC, alcohol use or hazardous drinking (as measured by the AUDIT), levels of distress about the injury that brought them to the ED, or the level of seriousness of that injury. Readiness to change drinking behaviors after the first BMI session also did not significantly differ between those who did or did not return to complete the second BMI session.

Study Limitations

These were secondary analyses of a data set with no a priori hypothesis about how the behavior of therapists affected participants' attendance at a second MI session. Participants in this study were ED patients, and although some patients use the ED as for primary care, we cannot assume that the reasons for treatment completion identified in this setting would generalize to other treatment settings. We also do not know to what degree treatment compliance, determined by attending the second BMI session if assigned to do so, was affected by social and personal factors, such as child care issues or transportation issues which may have hindered a participant's ability to attend the second BMI at the hospital. Although social and demographic characteristics did not significantly vary between the BIB-2 and BIB-1, personal ability to comply with the second BMI session or indeed the degree of intention of attending the second BMI session was not measured.

Although the behavior of the therapist during the first MI session predicted participants' attendance at the second MI, we may also hypothesize an interaction between participants' characteristics and therapist behavior influenced retention and outcome.

CONCLUSIONS

Attendance at a second MI session was related to therapeutic change, in that those participants who returned for a second MI session had less alcohol-related negative consequences 12-months postintervention. The results of the present study showed that the treatment participants actually received was not only simply a result of randomization but also involved whether or not those given the opportunity to attend the second session actually did so. The intention-to-treat model used to test hypotheses of treatment effectiveness is based on the principle that treatment is comprised of 2 components: the active ingredients of the specific treatment and the patient's response to these active ingredients. We have to understand what components of a treatment and participant characteristics increase treatment compliance, as well as examine what active components of a treatment account for participant outcomes. Of importance in the present study is the finding that the self-reported behavior of the therapist during the initial BMI session, particularly offering emotional support to participants, predicted retention, while important pretreatment patient factors did not. To the extent that better patient outcomes are a function of adequate exposure to the active ingredients of a treatment, and adequate treatment exposure is associated with patient retention, these findings suggest, as did Miller's review (1985) over 10 years ago, that patient motivation and retention in treatment may be more a function of what the therapist does during treatment than what the patient brings to the treatment session. Future analyses of the effect of and reasons for participants' motivation to continue in treatment may provide some increased understanding of the interaction between participants' behavior

and therapeutic mechanisms that predict treatment outcomes (Lee et al., 2007).

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