Brief Report: Maintenance of Effects of Motivational Enhancement Therapy to Improve Risk Behaviors and HIV-related Health in a Randomized Controlled Trial of Youth Living with HIV

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Objective To examine the maintenance of effects of Motivational Enhancement Therapy (MET) shown to improve risk behaviors and viral load in youth living with HIV (YLH) immediately posttreatment.

Methods Sixty-five youth (ages 16–25 years) were randomized to Healthy Choices or a waitlist control. Frequency of substance use, frequency of unprotected intercourse, and viral load were obtained at baseline, 3, and 6 months after study entry. The waitlist control then received intervention. An additional data collection was obtained at 9 months for follow-up of the original treatment group.

Results One-tailed ANOVA showed that the treatment group had greater reductions in viral load and alcohol use from baseline to 6 months. These reductions appeared to be maintained at 9-month follow-up. Improvements in sexual risk were not evident.

Conclusions MET showed significant promise in reducing substance use and in improving HIV-related health in YLH immediately posttreatment. These effects were maintained after treatment termination.

Key words adolescent; HIV; intervention; risk.
in YLH (Naar-King et al., 2006a,b,c). Specifically, the treatment group showed significantly greater reductions in unprotected sex acts and in viral load compared to the waitlist control group immediately posttreatment. Effect sizes (Cohen’s d) for condom use (.5) and viral load (.67) were medium. While between group differences were not significant for substance use, paired t-tests showed a trend toward improvement in alcohol and marijuana use ($p < 0.10$) within the treatment group, but no improvement in the control group.

The long-term effects of MI are unclear. In a recent meta-analysis, Hettema and colleagues (2005) report a large average effect size immediately posttreatment across many studies. Mean effect size drops to moderate after 3 months posttreatment. Only small effect sizes are reported 1 year after treatment completion. Hettema and colleagues (2005) note that an exception to this trend is found in studies, where MI is added to increase engagement in a more intensive treatment. This study assessed the maintenance of effects of MET at 6- and 9-month follow-ups. We hypothesized that improvements in viral load, number of unprotected sex acts, and reductions in number of times using alcohol and marijuana previously reported immediately posttreatment for youth receiving Healthy Choices would be stable over 6 months posttreatment.

### Method

The method has been previously described (Naar-King et al., 2006a). The research was approved by the Human Investigation Committee of the university affiliated with the hospital providing medical care, and all participants provided informed consent. Parental consent was waived for youth 16–18 years of age who may access HIV care without parental consent. Participants were recruited from a multidisciplinary adolescent medicine HIV clinic. Exclusion criteria were kept to a minimum: non-English speaking or psychotic features that impede questionnaire completion. The sample consisted of 65 participants (72% of the 88 who were study eligible). Half ($N = 32$) were randomized to receive Healthy Choices immediately after baseline, and half (waitlist control; $N = 33$) received Healthy Choices after the 6-month follow-up. Random numbers were generated by the project manager using an Internet based random number generator and were placed in sealed envelopes. The data collector received sealed envelopes revealing randomization status, which were opened after the baseline assessment so that the intervention sessions could be scheduled immediately for the treatment group. After baseline, youth randomized to Healthy Choices received four sessions over 10 weeks. Both groups completed 3- and 6-month follow-up assessments. After 6 months, the control group received the intervention. A subsequent 9-month follow-up assessment was also completed to assess maintenance of effects in the treatment group.

Youth were between the ages 16 and 25 years ($M = 21.09, SD = 2.66$). Only 14% ($N = 9$) were <18 years. Youth were primarily African American (88%; $N = 57$), and half were biological males ($N = 34$) including 1 male to female transgendered person. More than half of the sample (57%; $N = 35$) had less than a high school education. Retention rates at 6 months were 77% for the whole sample (24 intervention and 26 controls). At 9 months, 26 youth in the treatment condition were available for follow-up. There were no significant differences in demographic or baseline outcome variables between those retained and those lost at each follow-up.

### Intervention Condition

MET was originally developed to target alcohol abuse in adults (Miller et al., 1992). This four-session intervention was subsequently adapted to target sexual risk practices and alcohol and other drug use among HIV-positive adult men who have sex with men (Velasquez, von Sternberg, Dodrill, Kan, & Parsons, 2005). Subsequently, the intervention was modified to address substance use and HIV medication adherence among seropositive men and women (Parsons, Rosof, Punzalan, & DiMaria, 2005). For Healthy Choices, the current intervention, the basic MET session format was maintained; however, the personalized feedback and educational handouts were modified to reflect information from the study assessment and the target behavior. Furthermore, behavioral norms were not included in feedback as none exist for this population. Also, youth could work on 2 of 3 possible problem behaviors: Substance use (any substance), sexual risk, or health behaviors. Health behaviors included medication adherence for youth taking medications (38% of sample). For those youth not prescribed medications, intervention targets included other factors associated with viral load such as life stress and emotional distress (Antoni et al., 2006; Ironson et al., 2005), nutrition (Semba & Tang, 1999), and exercise (Bopp et al., 2004). In session 1, the client was informed that Healthy Choices will focus on the two most difficult behaviors based on their baseline assessment. The client was asked to choose which of the two behaviors to focus on first, and the counselor elicited
the client’s view of the problem using standard MI techniques. The remainder of the session focused on providing structured personalized feedback of risk behaviors based on the baseline assessment (normative data were not provided as these are not available for HIV+ youth), building client motivation to initiate/maintain changes, decisional balance exercises to clarify the perceived pros and cons of behavior changes, and consideration of a behavioral change plan. The change plan was presented as an option for the client, and the client set the change plan goal. For example, clients not ready to change could focus on thinking about change as their goal, or a goal could simply be to return for the next session. The second session (week 2) followed the same format for the second target behavior. In the subsequent two sessions (weeks 6 and 10), the therapist reviewed the personalized behavior change plan, continued to monitor and encourage progress, problem-solved barriers, and elicited strategies to maintain health behaviors and to prevent relapse. Interventionists were three clinical psychology graduate students who participated in a 2-day training followed by weekly supervision and review of videotaped sessions with a member of the Motivational Interviewing Network of Trainers.

**Study Variables**

Frequency of illicit alcohol and other drug use was measured using the Timeline Follow-Back Procedure (Sobell & Sobell, 1992). While all substances were assessed, the study focused on alcohol and marijuana use as frequency of other drug use was very low (Naar-King et al., 2006c). To account for substance use binges, two variables were utilized: (a) number of standard drinks in the week containing the maximum number of drinks and (b) number of times marijuana was used in the week containing the maximum number of times used. The Sexual Risk Behavior Scale was modeled after the work of Jemmott, Jemmott, Fong and McCaffree (1999), and total number of intercourse acts without a condom in the previous 3 months was utilized as the sexual risk variable. Viral load with a log 10 transformation was the primary health outcome and was obtained via blood draws completed at the study visit or in clinic within 1 month prior to the study visit.

**Results**

Of the 32 participants assigned to the intervention condition, 10 did not attend any intervention sessions before the first posttest due to repeated cancellations. Of the remaining 22 participants, 18 showed for all four sessions, two showed for three sessions, and two only showed for 1 or 2 sessions. However, all available data were utilized regardless of intervention attendance (intent-to-treat analysis). Baseline data (Naar-King et al., 2006b,c) and 3-month outcomes (Naar-King et al., 2006a) have previously been reported. Change scores for each behavior were calculated by subtracting baseline scores from 6-month posttest scores. The t-tests compared these change scores between the treatment and control groups. Analyses utilized a one-tailed test given the pilot nature of the study and the unidirectional hypotheses. Also, paired t-tests examined differences from baseline to 9-month follow-up for the treatment group to test if reductions were maintained. Comparison between treatment and controls was not possible at the 9-month follow-up because the waitlist-control had received intervention at that time. Because substance use difference scores were highly skewed, a natural log was utilized in subsequent analyses. All statistical analyses were performed using the SAS 9.1 statistical software package (SAS Institute Inc., Cary, NC, USA).

As Table I demonstrates, the treatment group showed significantly greater reductions in viral load and alcohol use compared to the control group at 6-month follow-up. There were no differences in change scores for unprotected sex acts or marijuana use. Using Cohen’s d, effect sizes at 6 months were .3 for viral load and .2 for alcohol use.

**Table I. Change Scores of Health Risk Behaviors Between the Intervention Groups at 6-month Follow-up**

<table>
<thead>
<tr>
<th>Health risk behaviors</th>
<th>6 Month follow-up change score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T × Group raw change score</td>
</tr>
<tr>
<td></td>
<td>Mean (SD)</td>
</tr>
<tr>
<td>Viral load</td>
<td>−156.483(84.031)</td>
</tr>
<tr>
<td>Most standard drinks in 1 week</td>
<td>−9.65 (35.94)</td>
</tr>
<tr>
<td>Most # of times used marijuana in 1 week</td>
<td>−4.29(10.88)</td>
</tr>
<tr>
<td>Unprotected intercourse acts</td>
<td>−8.55(42.74)</td>
</tr>
</tbody>
</table>

*One-tailed test; degrees of freedom vary due to missing data or invalid viral loads.*
As shown in Table II, reductions in viral load, alcohol use, and marijuana use maintained for the treatment group at the 9-month follow-up. Effect sizes were .5 for viral load and .3 for alcohol and marijuana use.

### Discussion

A four session MI-based intervention showed significant promise in improving viral load and substance use in YLH both immediately posttreatment (Naar-King et al., 2006a) and 3 months after treatment termination. Results suggest that reductions were maintained 6 months after treatment completion, though a control group is necessary to confirm findings. While the study included all youth, effect sizes are likely to be stronger if only including youth with significant risk at baseline. As MI is known to more strongly maintain its effects when added to more intensive treatment (Hettema et al., 2005), it is possible that maintenance of effects in this population was due to the addition of MI to services already availability in the HIV clinic setting. Future studies should test the effect of the Healthy Choices intervention on engagement in care and ancillary services. Strategies to improve treatment retention are warranted such as scheduling first sessions immediately after data collection and offering home and community-based appointments.

The intervention appeared to have stronger effects on alcohol use, the behavior that has been targeted most often in MI studies (Hettema et al., 2005). The intervention did not appear to maintain its effect on condom use. This is consistent with a recent meta-analysis that suggested strong effects for substance use and adherence but inconsistent effects for sexual risk behaviors (Hettema et al., 2005). More intensive interventions, or ongoing MI boosters, may be necessary to prevent transmission of HIV and other STIs in this population. However, 75% of the sample did not have unprotected sex in the 3 months prior to baseline (Naar-King et al., 2006a), thus limiting the power to detect improvement in a small sample.

While the intervention had effects on health outcomes, it is unclear if these effects are due to improvements in adherence and viral load in the subsample of youth on medications or due to the improvements in health behaviors for the full sample. Future studies focusing on MI to improve adherence among YLH prescribed medications are warranted. Further research is necessary to confirm these findings in a larger clinical trial focusing on those youth demonstrating problem behaviors at study entry. MI shows promise as a method to support adolescents with chronic conditions who are transitioning into adulthood.

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Conflict of interest: None declared.

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