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A Pilot Study of Motivational Interviewing Targeting Weight-Related Behaviors in Overweight or Obese African American Adolescents

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A B S T R A C T

Purpose: To pilot motivational interviewing (MI) targeting weight-related behaviors in African American adolescents with body mass index ≥85th percentile.
Methods: A total of 44 adolescents were randomly assigned to MI or nutrition counseling with baseline and 3-month assessment.
Results: MI group reported improved eating behaviors and activity motivation.
Conclusion: Brief clinic-based MI interventions merit further study in this population.
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A disproportionate number (39.5%) of African American adolescents in the United States have body mass index (BMI) for age ≥85th percentile [1]. However, African American adolescents have received little attention in the empirical literature on interventions. The American Academy of Pediatrics recommends motivational interviewing (MI) as an effective method to promote behavior changes related to weight loss that can be delivered by nonmental health providers [2]. MI may be ideal because it can be easily integrated into clinic settings where physicians are continually frustrated by overweight trends and the associated health complications.

Healthy Choices [3], a four-session MI intervention to reduce HIV-related risk behaviors in African American youth, was adapted to target healthy eating and activity and to include caregivers. We hypothesized that the brief, targeted MI intervention would be effective in facilitating American Academy of Pediatrics priority behavior changes in overweight or obese African American adolescents. Adolescents who received this intervention would improve fast food and soft drink consumption, servings of fruits and vegetables, and physical activity. We also expected that the MI group would show increased intrinsic motivation for healthy eating and activity. Adolescent weight was measured, but not expected to change during the brief intervention period.

Methods

Of the 62 adolescent–caregiver dyads approached in an urban adolescent medicine clinic, 49 (79.0%) completed baseline assessment. Eligibility criteria included the following: (1) BMI ≥85th

Table 1
Baseline sample characteristics[a]

Variable	MI	Control	Overall
Youth			
Gender (% female)	81.8	77.3	79.5
Age (years)	15.05 (1.40)	15.18 (1.33)	15.11 (1.35)
Weight (kg)	102.31 (24.55)	95.78 (27.28)	99.05 (25.86)
BMI[b]	36.68 (6.93)	34.04 (8.54)	35.36 (7.80)
BMI percentile[c]	98.03 (2.71)	95.44 (5.13)	96.74 (4.26)
Caregiver			
Gender (% female)	100	95.4	97.7
Age (years)	43.73 (10.78)	41.57 (7.97)	42.67 (9.46)
Weight (kg)	100.89 (30.37)	94.08 (23.20)	97.56 (27.01)
BMI	37.47 (10.16)	34.41 (8.22)	35.98 (9.28)

[a] n = 44.
[b] Body mass index.
[c] Significantly different across groups, $p \leq .05$.

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Table 2
Between- and within-group differences for motivational interviewing (MI) and control (CO) groups at baseline and 3-month follow-up

Measure	Baseline (mean, SD)	3-months (mean, SD)	Independent samples *t* test (between subjects)	Cohen's *d*	Paired samples *t* test (within subjects)	Cohen's *d*[a]
Fast food use per week (times eaten in past week)						
MI	2.14 (1.51)	1.07 (1.00)	$p = .03$	.88	$p = .02$	.84
CO	1.41 (1.50)	1.71 (1.31)			$p = .49$	.21
Soft drink frequency (1–6 scale for single item)						
MI	3.00 (1.81)	2.25 (1.42)	$p = .63$	.20	$p = .04$	.46
CO	3.07 (2.12)	2.67 (1.72)			$p = .51$	.21
Daily servings fruit (FFQ)						
MI	1.06 (.95)	.96 (.99)	$p = .46$	.29	$p = .68$	.10
CO	1.67 (1.12)	1.29 (.92)			$p = .20$	.37
Daily servings vegetables (FFQ)						
MI	1.06 (1.14)	1.23 (1.00)	$p = .29$	.42	$p = .62$	.16
CO	1.30 (1.37)	.95 (1.07)			$p = .32$	.28
Intrinsic motivation for nutrition (1–7 scale for 11 items)						
MI	49.93 (14.17)	53.21 (12.28)	$p = .94$	.03	$p = .30$	.25
CO	46.82 (14.82)	49.82 (11.99)			$p = .27$	.22
Intrinsic motivation for exercise (1–7 scale for 11 items)						
MI	45.14 (11.41)	52.93 (13.26)	$p = .18$	.51	$p = .06$	.63
CO	46.35 (15.91)	47.88 (12.06)			$p = .59$	.11
Physical activity (average total METs[b] across 3 days)						
MI	127.03 (20.28)	126.73 (20.37)	$p = .57$	.22	$p = .03$	.01
CO	131.25 (25.73)	131.33 (25.05)			$p = .88$	.003
Body mass index (BMI)						
MI	37.60 (6.82)	38.10 (6.90)	$p = .74$	.12	$p = .24$	.07
CO	34.92 (8.44)	35.78 (9.88)			$p = .36$	.09

FFQ = Food Frequency Questionnaire.
[a] Effect size for within MI group difference at 3-month post-test ($M_{post} - M_{pre}$/pooled SD).
[b] MET = metabolic equivalent of task (rate of energy consumption during a specific physical activity).

percentile based on CDC age- and sex-specific norms; (2) self-identified as African American; (3) age between 13 and 17 years; and (4) residing with a caregiver willing to participate in the treatment. Exclusion criteria were pregnancy, moderate mental retardation, psychosis, or medical comorbidities. The Human Investigation Committee approved the trial. All caregivers provided informed consent. Adolescents provided assent. After baseline, the project manager randomly assigned (stratified by gender) half the participants to receive the MI intervention and the other half a nutrition counseling control.

Intervention and control conditions were matched for dose, timing, and interventionist—both were four 60-minute sessions with adolescent–caregiver dyads delivered by registered dietitians at weeks 1, 2, 6, and 10. Healthy Choices was adapted by asking adolescents to choose changes in nutrition or activity in week 1, with the second behavior discussed in week 2 by using standard MI techniques to elicit and reinforce change talk. The dietitian met first with the adolescent and then with the caregiver, and later devised a change plan with the dyad using a menu of change options specific to weight loss. Subsequent sessions focused on barriers and facilitators to eating/activity behaviors and revision of the change plan. The MI interventionist received 16 hours of initial training and weekly supervision from a member of the MI Network of Trainers. The MI protocol was tested with five feasibility cases (not included in the final sample) yielding a final treatment manual. All sessions were audiotaped, and formal treatment fidelity ratings were obtained by coding MI sessions [4]. For the control condition, a manual was developed for four sessions of nutritional counseling with caregivers and adolescents together, based on recommendations of the Expert Committee [5]. Four control sessions were rated to ensure that treatment contamination did not occur.

Data collectors were blind to study condition and administered measures at study entry and 3 months after test. Thirty-one dyads (70.5%) completed the post-treatment data collection (68% of MI and 77% of control). Primary outcomes were assessed using well-validated measures (Block Food Frequency Questionnaire [6] and 3-day Physical Activity Recall [7]) as well as a single-item measuring the past week's fast food consumption. Food Frequency Questionnaire variables included soft drink consumption using a 6-point Likert scale (1 = not eaten, 6 = eaten everyday in the last week) and daily servings of fruit and vegetables based on the report of typical consumption. Intrinsic motivation for nutrition and activity was assessed using a measure based on self-regulation questionnaires [8]. Intrinsic motivation subscales (11-items) used 7-point Likert scales to indicate agreement for reasons for healthy behavior (Because I enjoy exercising) (1 = not at all, 7 = very true). Both subscales had good reliability (Cronbach's alpha for eating: .86; Cronbach's alpha for activity: .87). Height and weight of the adolescents were also measured.

Results

There were no significant differences at baseline between groups except the intervention group had significantly higher BMI percentile ($df = 42$, $p = .04$) than the control group (Table 1). There was no significant difference between groups in the number of sessions attended (intervention mean = 2.27, standard deviation = 1.61; control mean = 2.68, standard deviation = 1.39). Twenty-seven percent of the intervention group and 36.4% of the control group received all sessions. Sixty-eight percent of the intervention group and 81.8% of the control group received two or more sessions.

Table 2 shows between- and within-group analyses of the primary outcomes. Independent samples *t*-test using SPSS 18.0 (SPSS, Inc., Chicago, IL) showed a larger decrease in fast food consumption in the intervention group than in the control group. Paired-samples *t* test demonstrated that the intervention group showed a decrease in fast food and soft drink consumption. The intervention group demonstrated an increased intrinsic motivation for physical activity, but decreased activity, though Cohen's $d = .01$. BMI did not change significantly for either group.

Discussion

This study suggested the initial feasibility of brief MI targeting healthy eating and activity in African American adolescents and caregivers. The full dose of four sessions was achieved only by a small percentage of participants; however, the MI group averaged at least two sessions, considered a minimal "dose" of the intervention [9]. Two sessions may be sufficient to facilitate small changes in motivation and behavior for healthy eating in a population with poor treatment retention [10]. Even small behavioral changes may be reasonable because the intervention was brief, involved low cost, and easily integrated into a clinic setting. The effect of the brief intervention on physical activity is less clear. Perhaps, this dietitian-delivered intervention placed more emphasis on diet versus activity, or targeting dietary behavior was more effective than addressing activity changes in the brief, clinic-based format. To improve physical activity outcomes, provider training may be needed to better address physical activity. Future studies may also consider two sessions of MI as a prelude for the more intensive programs that may be necessary for weight loss. Results must be verified with a larger sample and improved study retention.

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