

# Development of a Culturally Targeted Smoking Cessation Intervention for African American Smokers

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**Abstract** In this paper we describe the development a culturally targeted (CT) smoking cessation intervention for low-to-middle income African–American smokers. Based on theoretically based guidelines, modifications were made to a standard treatment manual for group-based smoking cessation counseling that incorporates cognitive-behavioral, motivational, and twelve step skills. Approximately 41% of the standard treatment materials were modified, and four new modules were developed. A pilot study was conducted to compare acceptability, feasibility and early outcome indicators in African American smokers randomized to the CT intervention compared with existing data from African American smokers treated using a non-targeted standard approach (ST). Outcomes from the CT pilot study were promising: results showed high levels of feasibility, acceptability and better adherence to nicotine replacement therapy, higher quit rates, and better retention and follow-up compared with the ST. Findings suggest that a culturally targeted and intensive group based smoking

cessation treatment is plausibly effective in improving smoking cessation outcomes in African American smokers, warranting a larger randomized trial.

**Keywords** Culturally targeted · African American · Smoking intervention

## Introduction

Tobacco smoking prevalence rates are comparable in adult Caucasians and African Americans (21.9% vs. 21.5%, respectively) [1]. Similar to other ethnic and racial groups, African Americans report a strong desire to quit smoking [2] and in fact, are more likely than Caucasians to have quit smoking for one day during the previous year [3]. However, African American smokers are less successful in their quit attempts compared to Caucasian smokers; a finding that persists even after controlling for socioeconomic factors [4, 5]. Factors associated with smoking cessation disparities among African American and other ethnic minority smokers are not completely understood. However, lower abstinence rates among ethnic minorities might imply limited referral to and/or use of effective smoking cessation treatments [6–8], differential outcomes when participating in recommended treatments [9] or higher rates of smoking relapse following periods of abstinence compared to the general population [9]. Combined, these factors highlight the need for the development of effective smoking cessation interventions for African American smokers, a sub-population at increased risk for morbidity and mortality associated with tobacco use [10]. The purpose of this study is to describe the development and early outcome indicators from a culturally targeted smoking cessation treatment program for African American smokers.

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Although the terms “African Americans” and “European Americans” are used throughout this manuscript, the authors acknowledge that there is great heterogeneity within these ethnic classifications. “African Americans” refers to those who self-identify as African American or Black, and whose ethnic origins can be traced to the Black ethnic groups of Africa.

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## Factors Associated with Higher African American Smoking Prevalence Rates

Many socio-demographic factors influence smoking behaviors in adults including race/ethnicity, age, gender, education, and SES [11]. Cognitive (i.e., stage of readiness, perceived benefits, barriers, self-efficacy, susceptibility to a disease) and psychosocial factors (i.e., stress, negative affectivity) also have an impact on health behavior outcomes [12–14]. Beyond the general factors known to influence smoking behaviors, several additional factors have been hypothesized to contribute to tobacco initiation and maintenance among African Americans.

Factors thought to influence smoking behaviors in African Americans can be summarized as—unique exposures for health risks, high prevalence of risks not associated with unique exposures, and the need for greater access to culturally competent risk reduction approaches [15]. Unique sociocultural exposures for African American smoking behaviors include elevated stress associated with living in areas of high poverty [16], the presence of other smokers in the home [17], more permissive social norms related to smoking [18] including smoking within the home [19], less advice to quit smoking from health care providers [6] and the direct marketing to African American communities by tobacco companies [20] may also contribute to a widening gap in smoking cessation outcomes.

African Americans may also experience a higher prevalence of other behaviors that may relate to tobacco use and smoking cessation outcomes, such as negative affect, stress or differential alcohol use patterns [21, 22], less knowledge about the negative health consequences of smoking [23], and lower perceived threat associated with developing adverse health outcomes associated with smoking [24]. Limited access to smoking cessation treatments is another potential driving force behind current smoking trends among African Americans [8]. Finally, as discussed below, there is a paucity of clinical research addressing culturally competent smoking cessation treatment to African American smokers.

## Smoking Cessation Intervention in African Americans

Smoking cessation outcomes among African Americans vary considerably depending on the treatment approach. For example, one study with nicotine gum and motivational interviewing revealed relatively low quit rates (7–9% at 6 months) [25]. Other studies with African Americans have produced more favorable cessation outcomes. For example, quit rates ranged from 14–18% in a study with nicotine patch and intensive behavioral empowerment [26]. In another study with bupropion and brief motivational

counseling, results revealed fairly comparable quit rates at 6 months (21% bupropion vs. 14% on placebo) [27].

Despite the ethnic and racial differences in smoking topography and patterns of smoking cessation, few culturally targeted smoking cessation interventions have been conducted with African Americans [28–30]. Research provides preliminary support for the effectiveness of culturally targeted smoking cessation programs. For example, in one study using the nicotine patch and culturally targeted materials quit rates at 6 months were 27% [31]. Unfortunately, many previous efforts to evaluate the effectiveness of culturally targeted smoking cessation programs for African Americans were limited in that they have mainly utilized minimal intervention strategies (for example, pamphlets, print, videos, brief one-on-one, and/or group counseling; for review see [32]) were non-randomized trials [32] and have relied solely on non bio-chemically verified self-report measures to determine quit rates (e.g., [33–35]).

## Culturally Targeted Interventions

The most recent update of the Tobacco Use and Dependence Clinical Practice Guidelines [10] stresses the need for additional research to determine the effectiveness of culturally targeted smoking cessation interventions for racial and ethnic minorities. Cultural targeting has been defined as “a single intervention approach for a defined population subgroup that takes into account characteristics shared by the subgroup’s members” (p. 136) [36]. Health promotion interventions may be targeted to beliefs, knowledge, stage of readiness, or any combination of these constructs [37]. Culturally targeted interventions have documented efficacy in reducing health risk behaviors across a variety of behaviors and population groups [38–42]. The mechanism for the enhanced effectiveness of targeted interventions appears to be the increased saliency of the information such that targeted messages are more likely to be remembered and viewed as relevant [37]. Health communication programs and materials that succeed in making information relevant to their intended audience are also more effective. Further, targeted interventions are better suited to maximize the influence of known behavior change facilitators and to address general and culturally specific barriers to change.

## Study Aims

The overall purpose of this study was to culturally target a standard community-based and intensive cognitive behavior smoking cessation treatment intervention, with proven effectiveness among African Americans [43]. Here we report on the theoretical framework and strategies guiding

the development of the targeted intervention and preliminary findings from a pilot test of this intervention in an urban sample of low-to-middle income African American smokers. Study findings may have important implications for future research aimed at increasing the effectiveness of culturally targeted smoking cessation approaches.

## Methods

### Rationale and Theoretical Framework

Research investigating the unique smoking cessation treatment needs of African American smokers is a new and growing area of research. However, like in many areas of health behavior change, there is a dearth of research guided by theoretically grounded cross cultural approaches [44]. The theoretical framework underlying the development of our culturally targeted smoking cessation program was derived from the **PEN-3 Model of health behaviors** [45], as well as theoretically grounded strategies for improving the cultural appropriateness of health promotion programs [36].

The PEN-3 theoretical model emphasizes culture as the central reason for health behavior and the primary consideration in the development of health promotion programs [46] and has been used in numerous studies to aid in the development of culture-centered interventions (e.g., [46–48]). The PEN-3 model was influenced by several predecessor models, including the health belief model [49], theory of reasoned action [50], and the PRECEDE–PROCEDE model [51, 52].

According to Airhihenbuwa [45], there are three phases in the PEN-3 model. In the first phase, the *Persons, Extended family, and Neighborhoods* that comprise the targets for the intervention are identified. In this intervention, we focused specifically on communities on the south side of Chicago with high concentrations of low-to-middle income African American smokers [53]. African Americans from lower socioeconomic groups have some of the highest levels of adverse smoking outcomes in the United States [10]. Study participants were recruited as part of a larger community-based initiative to reduce smoking behaviors among African Americans and included outreach in community-based health centers, partnerships with local schools whereby students provided their parents or other care providers with information about smoking cessation treatments, and word-of-mouth referrals from African Americans who had previously participated in our standard smoking cessation program.

In the second phase of the PEN-3 model (the *Perceptions, Enablers, and Nurturers*), the specific cultural factors that affect tobacco use in African Americans were identified and integrated within standard treatment modules. A

comprehensive search of the extant literature was conducted to identify predictors of smoking behaviors as well as barriers to smoking cessation (e.g., [16, 54, 55]). Further, we used the strategies outlined by Kreuter and his colleagues [36] to increase the cultural relevancy of our smoking cessation treatment for African Americans including using: (a) *peripheral strategies* (e.g., culturally appropriate packaging, including images and exemplars with African Americans); (b) *evidential strategies* (e.g., enhancing perceived relevance by presenting evidence of impact of smoking on African Americans); (c) *linguistic strategies* (e.g., using language (vernaculars and idioms) relevant to the African American); (d) *constituent-involving strategies* (e.g., including facilitators and/or group members who are racial/ethnic minorities); and (e) *sociocultural strategies* (e.g., discussing smoking-related risks within the context of the broader social and cultural values of African Americans).

Guided by the PEN-3 model, in the third phase we addressed the *Positive, Existential, and Negative* behaviors that may impact smoking cessation among African Americans. **Activities conducted during this phase of the project were highly focused on increasing knowledge and readiness to quit smoking and removing culturally salient barriers to participation in a formalized smoking cessation treatment program.** These activities included conducting an orientation session prior to the onset of the intervention study. Specifically, we addressed knowledge deficits about the effectiveness of smoking cessation treatment programs, myths about the dangers associated with nicotine replacement therapies and cultural norms regarding the need to “quit cold turkey.” Further, we utilized sociocultural strategies to highlight the factors that were contributing to the high smoking prevalence and nicotine dependency in African American communities. In particular, the discussion focused on the level of direct marketing to the African American community in the forms of billboards, sponsorship of sports and other social events, and advertising in print media marketed to African Americans [20].

Additional topics addressed included exposure to young African Americans to tobacco products due to the availability of cigarettes at neighborhood convenience stores or by single-cigarette vendors (against the law), the strategies used by tobacco companies to increase the appeal of mentholated cigarettes to African Americans (products that are associated with increased health hazards), and **statistics highlighting the devastating health and economic consequences of tobacco use by African Americans.** This was followed by positive messages about quitting smoking such as the health benefits for the individual and their family members, the financial advantages to quitting smoking and the contribution to the health of the larger African American community by participating in smoking cessation treatment research.

## Culturally Targeted (CT) Treatment Program Development

The core of the culturally targeted (CT) smoking cessation treatment manual was derived from a standard smoking cessation treatment program and manual developed by smoking cessation researchers (AK) at The University of Chicago (King<sup>©</sup> and Riley, 2001) [56] which is now implemented across Chicago in conjunction with the Respiratory Health Association of Metropolitan Chicago (Courage to Quit<sup>©</sup>, King, 2008) [57]. The standard treatment (ST) incorporated evidence-based methods modified from the Clinical Practice Guidelines for Treating Tobacco Use and Dependence [58], and The Tobacco Dependence Treatment Handbook: A Guide to Best Practices [59]. The ST program also incorporates each of the best practices identified by the Clinical Practice Guidelines [58] for group formats including content focused on problem-solving and preparation for quitting, **intra-treatment social support, optimal treatment dosing (4–7 sessions) and length in weeks (>8 weeks)**, and nicotine replacement therapy.

Specifically, the ST program includes weekly group (or individual make-up sessions) meetings over 6 weeks, with the **quit date targeted for the third session**. The first two sessions **focus on reviewing past quit attempts, identifying and creating plans for triggers, noting the health and financial gains of quitting, customizing a motivational decisional balance sheet, obtaining social support, and presenting self-monitoring “wrap sheets” to place around the cigarette pack and note the number of cigarettes and situations and moods preceding each cigarette**. The third session, which is also the quit date, focuses on processing participants’ experiences that day with modules on craving and withdrawal, and an emergency plan for setbacks. The last three sessions are **comprised of group discussion and modules on high risk situations and cognitive techniques to manage high risk situations**.

Although the ST program was not specifically targeted to the cultural needs of African American smokers, our previous trials with African American smokers did include components of “surface structure” targeting in that they were conducted in settings familiar to African Americans and were ethnically homogeneous [60]. Surface structure targeting, matching intervention messages and materials to the observable characteristics of a target population, is appropriate for increasing the cultural sensitivity of an intervention but is not sufficient to address the myriad of sociocultural factors thought to influence smoking behaviors among racial and ethnic minority groups [60] (See [43] for a full description of components of the standard smoking cessation treatment program and smoking cessation outcomes in a sample of African American smokers). As such, a natural progression in our

program of research was to move beyond surface structure targeting to address “deep structure” variables; that is socio-cultural variables known or hypothesized to influence health behaviors [60].

## Culturally Targeted Version of the Standard Treatment Program, “Free from Smokin”

The general effectiveness of smoking cessation programs delivered in a group format is well supported [58]. The decision to culturally adapt our standard treatment program, as opposed to development of an entirely new intervention, was based on our program’s use of evidence-based practices, the comparability of our program to similar community-based smoking cessation programs (i.e., ACS Fresh Start) [61] and the promising results achieved in an earlier study by our group using the standard intervention with African American smokers (see [57]). Further, the adaptation of our standard treatment program to the specific smoking cessation needs of African American smokers is consistent with calls to disseminate effective behavioral interventions [62].

In Table 1, we outline the similarities and differences between the various components of the previously developed ST intervention (King<sup>©</sup> and Riley, 2001) [56] and the CT intervention for African American smokers. The main features (structure, content, length, etc.) of the ST and CT treatment manuals were similar; however, important differences between the manuals exist.

As can be seen in Table 1, the primary difference in the CT versus the ST groups was the focus on themes relevant to African American smokers and the modified materials as described above on culturally targeted themes, images and messages. In the CT treatment manual, modifications in terms of content, appearance or motivational approaches were made to 41% (14 of 34) of the modules. In addition, four new modules were added, **including evidential and sociocultural strategies such as statistics on health consequences of smoking in African Americans**, faith and prayer as coping strategies, **descriptions of famous African Americans who have died of tobacco-related disease**, and the historical relationship between the tobacco industry and African Americans throughout several generations in our country (e.g., tobacco companies have historically profited as a result of the cheap labor provided by African American sharecroppers and currently profit as result of the high levels of tobacco use by African Americans). The manual also included culturally specific triggers for smoking, smoking contexts, norms, and barriers to smoking cessation. All other materials and procedures were identical in the ST and the CT treatment manuals. Figure 1 illustrates an example of a modified culturally targeted module versus the standard module for weight concerns (Fig. 1a), and

**Table 1** Similarities and Differences between Culturally Targeted (CT) and the Non-Targeted Standard Treatment (ST) Programs

	Targeted smoking cessation program (CT)	Non-targeted smoking cessation program (ST)
<b>Similarities</b>		
Theoretical basis	Stages of change and health beliefs model	Stages of change and health beliefs model
Delivery channel	Group and individual support	Group and individual support
Counseling technique	Professionally facilitated	Professionally facilitated
<b>Differences</b>		
Purpose	Increase smoking cessation outcomes by addressing general and culturally specific determinants of smoking (e.g., beliefs, attitudes, norms)	Increase smoking cessation outcomes by addressing general population derived determinants of smoking
Counseling	Targeted counseling plus general support	General support and counseling
Information delivery	Didactics and print materials were based on statistics and health information specifically about African American smokers.	Didactics and print materials were based on statistics and information from general populations of smokers.
Packaging of contents	Use of images, color, pictures that convey relevance to African Americans (Peripheral targeting)	Generic content presumed to appeal broadly
Educational content	Increase perceived relevance by presenting evidence specific to African Americans (Evidential targeting)	Generic content based on aggregated data
Educational messages	Delivered in the dominant language or use of language relevant to African Americans (Linguistic targeting)	Delivered in the language of the majority
Context and meaning of messages	Relevant to the cultural values, beliefs, behaviors of African Americans (Sociocultural targeting)	Generic content based on mainstream culture
Involvement of larger community	Involvement of target community (Constituent involving targeting)	Generic model of intervention delivery

examples of two new modules which were developed (Fig. 1b, c).

### Counselor Training

The ST and CT smoking cessation programs were both designed to be delivered by a Master's level clinician or someone with extensive experience in health care delivery with patient contact. Briefly, counselors were trained by a Ph.D. level smoking cessation expert (AK) in group training sessions and covered the following content areas: 1) cognitive/behavioral approaches used in the program, 2) smoking related health information, 3) motivational interviewing techniques, 4) strategies for eliciting barriers to smoking cessation and how to address these barriers, 5) roles and responsibilities of a group facilitator, 6) participant confidentiality, 7) helping participants deal with smoking triggers, cravings and lapses, 8) listening and feedback skills, and 9) providing non-judgmental support. In order to increase the cultural sensitivity of the intervention, all counselors were provided information and approaches for recognizing and addressing psychosocial and cultural barriers along with the general principles and support for smoking cessation. The combination of culturally targeted and general individual support facilitates addressing a wide-range of psychosocial and culturally derived determinates of smoking behavior. Group counselors received ongoing supervision including audio-taping

and reviewing sessions. Adherence checklists were also employed to monitor treatment fidelity and to periodically review performance for consistency and accuracy [63].

### Recruitment of African American Smokers

The Clinical Addictions Research Laboratory at the University of Chicago has a history of successful recruitment and retention of diverse populations of smokers into smoking cessation trials (i.e., college students, women, low-income, LGBT and African American smokers). Best practices employed by our research team for recruiting diverse samples includes hiring a recruitment specialist to lead outreach efforts, a diverse team of outreach workers, and strategies to conduct brief eligibility assessments and recruitment in the field and online. Three general types of research approaches are typically used: clinic based recruitment and “active” and “passive” community outreach methods [64–66]. Clinic based recruitment involves direct referral of smoking patients by medical providers as well as clinic based recruitment in community-based health centers serving the target population. Active recruitment approaches consist of outreach and recruitment at street and venue locations, including health fairs, festivals, gyms, schools, churches, community groups, organizations and other locations where members of the target population socialize or congregate. Passive community outreach includes posting recruitment information in targeted media



(a)

**Session 4: Weight Gain**Standard

The average smoker gains 3-7 lbs.

Culturally Targeted

The average smoker gains 3-7 lbs. Weight gain may be an important issue for African American smokers, as obesity is a growing problem in the community. African Americans may also gain more weight than other groups. But this doesn't have to be the case with you.



(b)

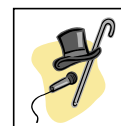
**Session 5: Smoking is not glamorous**

These famous African-Americans graced us with their stage presence, entertained us with their music, and captured us with their smiles. Unfortunately, they also share in common the fact that they died prematurely of a smoking-related cause. Take a moment to reflect on famous African-Americans who lost years of their lives due to tobacco. You may also know of member of your community (family, friends) who has died of a tobacco-related cause. Honor their memory. Learn from their experiences. Keep your goals in mind and remember that you don't have to join these ranks.



**LOUIS ARMSTRONG:** In 1955 he was made America's musical ambassador, and in 1964 he recorded his most well known song, "Hello Dolly". Louis Armstrong was a talented and successful musician whose work influenced jazz technique and style, yet he was also a smoker. On July 6, 1971 Louis Armstrong died of a lung infection and heart complications. His trumpet was buried with him, as he wished.

**NAT KING COLE.** He was born in Montgomery, Alabama, and grew up in Chicago. Nat "King" Cole, singer, pianist, songwriter, famous for "Nature Boy", and most notably "Unforgettable," was the first African-American to have his own radio and TV show. He also smoked 3 packs of cigarettes a day, and died of lung cancer February 15, 1965.



**Fig. 1 a** Example of standard treatment (*left*) and culturally targeted treatment (*right*) module in Session 4 on weight gain that may be experienced during smoking cessation. Note the peripheral strategies and relevance to African Americans in the CT version. **b** Additional module in the CT manual presented in Session 5 on famous African

Americans who have died of tobacco-related disease, as an evidential strategy for cultural targeting. **c** Additional module in the CT manual presented in Session 6 on the history of tobacco in African ancestors, as a sociocultural strategy for cultural targeting

outlets, posted flyers, personal referrals, and word of mouth. All recruitment materials were designed to be culturally salient (i.e., images).

**Pilot Study**

Once the treatment manual was developed, individuals with expertise in smoking cessation, curriculum development and cultural targeting helped to refine all materials. We next conducted a pilot test of the culturally targeted and intensive smoking cessation intervention for African Americans compared with outcomes achieved using the

standard treatment program. As part of a larger community-delivered smoking cessation study, we compared acceptability, feasibility, patch adherence and quit rates in participants randomized to the CT program versus the combined data available for all the African Americans treated with the ST program [43]. The CT and ST samples were recruited using the same techniques and from the same neighborhoods. Inclusion criteria for all groups included: African American adults between the ages of 18–65, smoking a minimum of one (1) cigarette daily for 12 months or more, an education greater than 9th grade, a stable residence and contact number, and the ability to

(c) **Session 6: The History of Tobacco in the African American Community**

**History:** Several hundred years ago, tobacco became a major cash crop in the south. African American slaves were forced to do the daily hard physical labor to harvest the crops as tobacco companies made a lot of money on the sale of tobacco and its products. Once they found that people quickly became addicted to cigarettes, they knew they wanted to produce more and more tobacco crops, which increased the need for slaves as cheap labor to do the work. **The bottom line: Tobacco companies have been built on the backs of African Americans.**

**How it is now:** Today, the African American community is still being targeted by tobacco companies for profits. Look around you – on billboards, magazines, in the clubs and stores, there is specific and targeted advertising to encourage you to start smoking and keep you hooked! The “hip” image of smokers, the promise of cool, minty taste, and the lies about “less harm” with menthol and lower-tar brands were all developed to appeal to African Americans.

**How you are changing this:** You are showing strength and courage by coming to this program. You have the skills to break away the chains of this addiction. Think about how tobacco has affected you, your family, and your community at large. Share this information with those you care about and use this to further keep you moving forward with your goals! **The bottom line: Tobacco companies are still being built on the backs of African Americans. However, you have the power to change this and become a healthy new you!**

Keep pushing forward – if you are smoke-free, congratulations! This program works if YOU work it, so continue to use the skills and your community, church, or family to keep supporting you!



Fig. 1 continued

understand spoken English. Exclusion criteria included any current major medical or psychiatric conditions or medications taken less than 3 months. At the intake interview, individuals were asked about their current interest in quitting smoking on a 10-point scale (higher scores meaning more interest in quitting) and only those persons scoring a 7 or higher on the scale were eligible. For additional details on recruitment and screening procedures, see [43]. The study was approved by the University of Chicago Institutional Review Board. Therapists were also randomized to the treatment groups. The CT group was lead by a Caucasian female, and the various ST groups were lead by a Caucasian female, Caucasian male, a Latino female, and a Biracial female.

## Procedures

The smoking cessation intervention was delivered in a group format, with each session lasting 75–90 min. The CT group was conducted at a community center and the ST

groups were conducted at that same community center, as well as at other community sites (elementary schools and a church). There were six-two-hour weekly study visits and follow-up interviews at 3- and 6-months following the end of treatment. Upon arrival each week, subjects completed questionnaires and a brief interview with a research assistant, provided an expired air carbon monoxide (CO) sample (Smokerlyzer®, Bedford, Medford, NJ), and received their weekly supply of nicotine patches. These procedures took approximately 30 min and were immediately followed by a behavioral therapy group counseling session. The quit date was targeted for the third week (session 3) of the intervention. At the end of treatment during the sixth study visit, participants received a small monetary compensation (\$40 gift card and one drawing per group for a \$75 gift card).

## Nicotine Replacement Therapy

For those who met eligibility for nicotine replacement therapy (i.e., no past adverse reactions to NRT), complimentary samples of the nicotine patch (Nicoderm CQ,

GlaxoSmithKline<sup>®</sup>) were distributed at each session (to begin on the quit date) and monitored by a study physician. Dosing was based on baseline smoking levels as follows:  $\geq 15$  cigarettes daily smokers received 21 mg daily for 2 weeks, then 14 mg for 1 week, and then 7 mg for 1 week; 10–14 cigarettes daily smokers received 14 mg daily for 2 weeks, then 7 mg for 1 week; 1–9 cigarettes daily smokers received 7 mg daily for 2 weeks.

### Post-Treatment Follow-Up

Participants were scheduled for two follow-up interviews at three and six months, respectively. At these visits, they completed follow-up surveys on craving and smoking behavior since the last visit, objective measures of smoking status (CO levels), and engaged in a brief booster group session for approximately 30 min.

### Measures

During the orientation session, participants completed questionnaires assessing demographics, health history, and smoking behaviors. Level of physical dependence to tobacco was assessed by the Fagerström Test for Nicotine Dependence (FTND) [67] and stage of readiness for smoking cessation was measured using the Smoking Contemplation Ladder [68]. To evaluate response to the orientation session, in the last two randomized groups (one each of CT and ST groups), participants completed a seven-item questionnaire assessing their impressions of the intervention, with each item rated on an 11-point Likert-type scale (0 “strongly disagree” to 10 “strongly agree”): on the level of perceived focus on smoking issues pertaining to African Americans, commitment to assisting African Americans with smoking cessation, potential helpfulness of the program, how comfortable they felt about the program, the ability of the program to address their unique smoking issues, and the unique smoking issues of African Americans in general, and whether they felt the program would be “a really good fit” for their needs.

Feasibility was assessed by examining completion rates for the overall treatment program (one month post quit date), and for the three and six month follow-ups. Acceptability was assessed by participants’ post-treatment ratings of the various program components and the smoking cessation counselor. These included perceived helpfulness ratings on eight treatment elements including taking weekly CO tests, identifying smoking triggers, techniques for handling triggers, taking care of physical and emotional needs, countering rationalizations, self-monitoring “wrap sheets”, deep breathing, and addressing concerns regarding weight gain during smoking cessation. Participants also rated their smoking cessation treatment counselor using a 5-point

Likert scale on the following five items: the working alliance, communication, sharing of feelings, ease of quitting without the therapist, and the role of the therapist in aiding the quit attempt. A total composite score for all five therapist rating items was calculated for each subject.

Adherence to guidelines for use of the nicotine patch was assessed by determining the ratio of the total number of patches reported taken divided by the total number of patches that were distributed for each participant, and was dichotomized into two main categories: low (using less than 75% of distributed patches) or high (using  $\geq 75\%$  of patches). These distinctions were chosen to approximate patch use on the majority of days of treatment and to ensure relatively steady state nicotine levels [69].

Treatment outcome was determined by 7-day point prevalence smoking quit rates at end of treatment, and at three- and six-month follow-up. All self-reported smoking behaviors were objectively verified by expired air carbon monoxide readings  $\leq 6$  ppm. If CO was higher than this level or a CO sample was not provided, then the participant was conservatively classified as relapsed.

### Statistical Analyses

Data were analyzed by Statistica<sup>®</sup> and Excel<sup>®</sup> software packages. The main outcome variables were attendance, patch adherence, and biochemically-confirmed seven-day point prevalence smoking quit rates. Data were summarized into mean and SEM or frequency data, as appropriate. Groups were compared on background and smoking characteristics by *t*-tests and Chi-Square, where appropriate. Chi-Square analyses were also employed to explore differences in retention, adherence, and smoking cessation quit rates between ST and CT.

## Results

### Sample Characteristics

The CT group consisted of 8 African American smokers with similar demographic and smoking background characteristics as smokers in the ST study. A total of seven ST intervention groups ( $N = 50$ ) were also conducted with an average of seven members per group. The CT and ST groups did not differ on any demographic or smoking variables. The majority of the overall sample was middle aged ( $M = 45.4$  years, range 26–67), female (90%), and had completed at least a high school education ( $M = 13.1$ , range 9–18). Approximately 31% of participants were married and 69% were employed either full or part-time. Nearly two-thirds of the sample were low-income (42% reported a household income of \$20,000 or less per year,



and 22% with household incomes between \$20,000–\$30,000). Participants smoked an average of 13 cigarettes per day (range 3–60), with the majority (86%) preferring mentholated cigarettes. On average, participants initiated smoking at 17.7 years old, and averaged 2.4 prior quit attempts. Participants were moderately dependent smokers as indexed by FTND scores ( $M = 4.8$ , range 1–9) and baseline expired air CO levels ( $M = 15.4$  ppm, range 1–45). Results from the Contemplation Ladder questionnaire revealed that the majority of participants were in the Preparation or Action stages ( $M = 7.3$ , range 5–10).

#### Evaluation of the Orientation Session

The CT group had significantly higher ratings than the ST group on perception of the specificity of the program to issues pertaining to African American smokers [ $F(1,14) = 19.30$ ,  $P < .0005$ ]. The CT group also had marginally significant higher ratings than the ST group on the perceived ability of the program to address their unique individual smoking cessation needs and the general needs of African American smokers ( $P_s = .07$ ) and on the perception of the program being a “really good fit” ( $P = .10$ ).

#### Program Retention and Medication Adherence

Overall program completion rates were directionally better in the CT versus the combined ST groups, 100% vs. 74% ST [ $X^2(1) = 2.68$ ,  $P = .10$ ]. Retention at 3- and 6-month-ups were significantly better in the CT versus the ST group, with 100% of CT participating at both intervals, but only 64% and 58% of ST participating [3 months:  $X^2(1) = 4.18$ ,  $P = .04$ ; 6 months:  $X^2(1) = 5.67$ ,  $P = .02$ ]. The CT group also had marginally significant higher adherence to nicotine patch compared with ST (88% vs. 51% highly adherent, respectively) [ $X^2(1) = 3.63$ ,  $P = .06$ ]. Ad-hoc reasons cited for patch discontinuation in both groups included mild side effects (i.e., sleep problems, skin irritation, etc.) or personal feelings that the patch was no longer needed.

#### Program Ratings

In the CT group, ratings of perceived helpfulness of the smoking cessation treatment program components were higher than in the ST condition. The CT group had significantly higher rating than the ST group on the perceived effectiveness of strategies used to identify smoking triggers (4.89 vs. 3.00), to take care of physical and emotional needs (4.75 vs. 3.31), and cognitive exercises aimed at managing high risk smoking situations (4.75 vs. 3.72) [ $F_s(1,45) > 4.45$ ,  $P_s < .05$ ]. The CT group also had a significantly higher therapist evaluation rating than the ST group [4.5 vs. 4.0, respectively;  $P < .05$ ].

#### Treatment Outcomes

Using intent-to-treat analyses, end of treatment biochemically-verified quit rates were directionally better in the CT group (63%) versus the ST group (36%) [ $X^2(1) = 2.38$ ,  $P = .12$ ]. At three month follow-up, CO-verified quit rates remained directionally higher in the CT (50% quit) versus ST group (26% quit), but at six months, the quit rates were similar between groups (25% vs. 24%).

#### Discussion

African Americans have higher than expected prevalence of risk factors (e.g., heavy drinking and obesity) for diseases associated with or exacerbated by smoking (e.g., heart disease) [70, 71]. Smoking related health disparities continue to challenge underserved populations and underscore the need to develop culturally appropriate interventions to reduce these disparities. The present study described the theoretical and developmental approaches used to culturally target a standard smoking cessation treatment program for African Americans smokers. Further, we describe the results of a preliminary study comparing treatment outcomes for African Americans participating in a ST versus CT smoking cessation treatment program.

A recent review of the literature on smoking cessation treatment programs for African American smokers highlighted eleven studies that included elements of cultural targeting [66]. To date, many of the targeting approaches can be characterized as surface structure or peripheral level targeting such as the inclusion of graphics and images relevant to African American culture. Peripheral level targeting serves to increase the appeal and acceptance of health promotion materials, but may be less successful in promoting health behavior change [60]. The lack of theoretically grounded approaches and consistent standards for culturally targeting interventions may contribute to the inconsistent findings about the benefits of culturally targeted health promotion materials.

The cultural adaptation of our ST curriculum was guided by the PEN-3 model [45] and strategies outlined by Kreuter and his colleagues [36] to facilitate the identification of psycho-cultural variables that may facilitate or hinder smoking cessation among low-income African American smokers. Analyses from the pre-intervention orientation session and the overall program evaluation suggests that the CT condition was perceived as better able to address socio-cultural components of smoking cessation compared to the ST condition. For example, participant responses to the orientation session suggested that participants in both groups (ST and CT) rated the general program components

similarly. However, participants in the CT orientation session had overall higher scores on items measuring the perceived specificity of the program to issues relevant to themselves and other African Americans.

Beyond these perceptual factors, several factors with more direct implications for improved treatment outcomes were observed in the CT group compared to ST. First, a higher percentage of participants in the CT program attended all treatment sessions. Level of treatment engagement, as evidenced by attendance levels, is associated with improved outcomes in a number of behavioral change programs [10]. Secondly, CT group participants were more likely to be adherent to NRT recommendations with more than two-thirds of CT participants taking each of the recommended doses. Among ethnic and racial minorities, acceptance and use of NRT is lower than among Caucasian smokers [72, 73]. As such, the greater acceptance of NRT therapy in our sample of African American smokers was significant given that NRT significantly increases the likelihood of a successful quit attempt [74]. Addressing cultural beliefs and misinformation regarding the negative health consequences of NRT during the orientation session may have contributed to improved NRT adherence. Finally, ratings of the helpfulness of treatment components were generally higher among the CT participants, despite the similarity in approaches used in both groups. Additional qualitative research is needed to better understand overall experiences with the various cognitive-behavioral treatment components, especially in the context of targeted and non-targeted treatment approaches.

Results of the pilot study also demonstrated the ability to train smoking cessation facilitators that are acceptable to this population and to recruit and retain African American smokers into an intensive group smoking cessation program. Interestingly, therapist evaluation ratings for both the CT and ST group were high. This effect appeared to be independent of the ethnicity or race of the therapist (data not shown). This finding underscores the notion that although ethnic matching may be preferable in some instances, therapists can work effectively with different ethnic groups if they have the appropriate levels of cultural awareness, knowledge, and skills to work with a specific target population [75]. Future research will need to more systematically determine acceptability and outcomes comparing ethnically matched and unmatched therapists delivering culturally targeted smoking cessation interventions.

Although not statistically significant, program completion and long-term retention rates were directionally better in the CT versus the ST group. Long-term retention of African Americans in smoking cessation clinical trials has been identified as a critical concern in evaluating the efficacy of smoking cessation treatments [76]. Many of the strategies suggested to increase retention of ethnic

minorities in research studies [77] were employed in both CT and ST conditions. We may speculate that the targeted treatment elements in CT may have fostered a sense of belonging and commitment to the research project, and a feeling that they were contributing to clinical research that would result in a better understanding of African American's lives, which led to better initial program completion and subsequent longer-term retention over the 6 months of follow-up.

Despite the preliminary nature of the pilot study and the small sample size, quit rate outcomes for the CT group suggest that a culturally targeted smoking cessation program is plausibly effective for decreasing smoking rates in African American smokers, warranting a full efficacy study. At the end of treatment, biochemically confirmed quit rates were 63% for the CT group quit smoking versus 36% of those in the ST group. Quit rates were also directionally better in the CT group at the 3-month assessment, but by six months, quit rates were similar to that in the ST groups. These intent-to-treat, biochemically-verified quit rates at end of treatment and follow-up are comparable to those observed in mainly Caucasian smokers engaged in similar treatment (i.e., with nicotine patch and intensive counseling) [78]. Nevertheless, quitting at 12 months is considered the benchmark indicator for smoking cessation treatment [79] and additional research is clearly needed to improve long-term abstinence rates among African American smokers. The same contextual factors observed in African American communities that hinder smoking cessation (e.g., less pressure to quit) may also serve as formidable barriers to long-term cessation and should be systematically addressed as part of intensive relapse prevention treatment.

There are numerous strengths to this study including the use of theoretical frameworks to guide the adaptation of an existing smoking cessation program for African American smokers; process variables on the elements of the program that were viewed as most effective; biochemically confirmed quit rates; long-term retention and follow-up of study participants; and comparison data from African American smokers who had received an equivalent but non-targeted smoking cessation intervention. However, the results should be considered in light of the study limitations. First, cultural targeting of the ST program was guided by theoretical frameworks, the extant literature, consultations with experts on culture and behavior among African Americans and previous findings by our research team. However, obtaining qualitative data from an independent sample or focus groups of African American smokers may have improved our ability to capture additional variables associated with smoking behaviors. Second, we did not collect any culturally-specific measures (e.g., acculturation, minority stress or experiences of discrimination) that may have provided

additional insight into factors that may influence within group differences in smoking behavior. Third, despite our use of many of the best practice approaches in recruiting African American smokers into intervention research (e.g., [64, 66]), our ability to recruit African American men was limited. Finally, due to the developmental and exploratory nature of this project, the study sample size was small which impacts power and generalizability of findings. Future studies will need to be conducted to address limitations and replicate study findings.

The study's results provide support for the need to continue efforts to refine targeted smoking treatment programs to aid smoking cessation among African-American smokers. Most studies, including our own, fail to address elements of minority stress which may increase vulnerability to continued smoking or relapse among African Americans. Minority stress, including experiences with discrimination, has been highlighted as an important but under-researched influence on health risk behaviors [80, 81]. Minority stress refers to the social stress that results from belonging to a stigmatized social category and is over and above general life stressors [82]. Future research is needed to determine whether and how minority stress relates to smoking initiation, maintenance and cessation. This is an area that we are addressing in our current research with African American smokers.

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