

Long-Term Effects of the Strong African American Families Program on Youths' Alcohol Use

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Objective: This report extends earlier accounts by addressing the effects of the Strong African American Families (SAAF) program across 65 months. Two hypotheses were tested: (a) Rural African American youths randomly assigned to participate in SAAF would demonstrate lower rates of alcohol use than would control youths more than 5 years later, and (b) SAAF's effects on deterring the onset of alcohol use in early adolescence would carry forward to mediate the program's long-term effects. **Method:** African American youths in rural Georgia (mean age at pretest = 10.8 years) were assigned randomly to the SAAF group ($n = 369$) or to a control group ($n = 298$). Past-month alcohol use was assessed at pretest and at 9, 18, 29, 53, and 65 months after pretest. **Results:** SAAF participants increased their alcohol use at a slower rate than did adolescents in the control condition across the follow-up assessments. At the 65-month assessment, SAAF participants reported having drunk alcohol half as often as did youths in the control group. Consistent with the second hypothesis, SAAF's effects on deterring initiation carried forward to account for its effects on alcohol use across time. **Conclusions:** Training in protective parenting processes and self-regulatory skills during preadolescence may contribute to a self-sustaining trajectory of disinterest in and avoidance of alcohol use during adolescence when peers begin to model and sanction it.

Keywords: adolescence, African American, alcohol, intervention, prevention

In an article previously published in this journal, Brody, Murry, Kogan, et al. (2006) described the theoretical bases and an empirical test of a family-centered preventive intervention for rural African American families with a son or daughter in early adolescence. The Strong African American Families (SAAF) program was designed to prevent the initiation and escalation of alcohol use. The impetus for SAAF was our study group's collection of longitudinal, epidemiological data indicating that many rural African American youths do not realize their developmental potential because of increasing rates of alcohol use, rates that currently are equal to or exceed those of African American age-mates living in densely populated inner cities. Alcohol use and abuse among rural African Americans forecast HIV infection, academic failure, school dropout, unintended pregnancy, involvement with the criminal justice system, and adult alcohol dependence. The absence of any efficacious alcohol use prevention programs designed specifically for the millions of African American youths who live in

rural Southern communities made the need for a preventive intervention like SAAF apparent.

The decision to develop a family-centered program was also informed by our data. Our research demonstrated that powerful protective factors against preadolescents' and adolescents' alcohol use originate in the family environment, particularly in parents' caregiving practices (Brody et al., 2004). Effective relationships with caregivers foster self-regulation, academic competence, and psychological adjustment while deterring initiation and escalation of alcohol use among rural African American youths. SAAF specifically targeted a cluster of developmentally appropriate, protective parenting practices that were linked in our research to low alcohol use levels. In a randomized prevention trial, evaluations of SAAF confirmed its efficacy in preventing alcohol use initiation and escalation that remained evident 2 years after youths took part in the program (Brody, Murry, Gerrard, et al., 2006) and also supported the developmental hypotheses included in the theoretical model on which it was based.

This report extends earlier ones by addressing SAAF's long-term efficacy across six assessments, which included a pretest and follow-ups administered 9, 18, 29, 53, and 65 months later. The literature has not addressed the long-term efficacy of family-centered preventive interventions designed to deter alcohol use among African American youths in general and those living in rural areas in particular. This article was designed to add to the literature by testing the hypothesis that rural African American youths randomly assigned to participate in SAAF would demonstrate lower rates of alcohol use than would youths assigned to a control group across assessments that spanned more than 5 years.

As a second extension of previous research, we sought to test the widespread conjecture that preventing the onset of alcohol use

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carries forward to serve as a mediator that accounts for long-term efficacy in prevention programs. Surprisingly few empirical demonstrations support this proposition (see Spoth, Trudeau, Gyll, Shin, & Redmond, 2009, for an exception), rendering this intuitive notion more theoretical than empirical. We therefore tested the hypothesis that SAAF's effects on deterring the onset of alcohol use in early adolescence would carry forward to mediate the program's long-term effects on alcohol use over time.

Method

Participants in the study were African American youths (mean age at pretest = 10.8 years) and their primary caregivers, who resided in rural Georgia. Families in this area live in small towns and communities in which poverty rates are among the highest in the nation and unemployment rates are above the national average. The intervention group included 369 families, and the control group included 298 families. Families were oversampled into the intervention to ensure that at least 350 would take part in SAAF. From lists provided by schools, 11-year-old African Americans residing in nine rural counties were randomly selected. Their families were contacted and invited to participate; the recruitment rate of 64% exceeds rates commonly reported for prevention trials. Recruitment procedures are described in detail in Brody et al. (2004); all procedures, consent processes, and research methods were approved by the Institutional Review Board of the University of Georgia. Of the recruited families, 85% completed pretest, post-test, and four long-term follow-up assessments, the last of which took place 5.4 years after the pretest (see Figure 1, CONSORT diagram). To preserve the random nature of the group assignments, the analyses included all families in the intervention condition who

completed all assessments regardless of the number of prevention sessions they actually attended, an intent-to-treat analysis. To evaluate differential attrition across experimental conditions throughout the long-term follow-up assessments, a two-factor multivariate analysis of variance was conducted with the intervention and control groups at each wave of data collection for demographic characteristics (per capita income, maternal education and age, number of children in the household) and outcome measures (alcohol use initiation, frequency of past-month alcohol use). No significant Group \times Attrition interaction effects emerged for any variable at any assessment.

To enhance rapport and cultural understanding, African American university students and community members who were unaware of the families' group assignments served as field researchers to collect data. At each data collection point, one home visit lasting 2 hr was made to each family; during each visit, primary caregivers provided written informed consent to their own and the youths' participation in the study, youths assented in writing to their own participation, and field researchers administered self-report questionnaires to caregivers and youths in an interview format. Each interview was conducted privately, with no other family members present or able to overhear the conversation. Each family was paid \$100 at each data collection point.

Intervention Implementation and Fidelity

The SAAF prevention program consists of seven consecutive weekly meetings held at community facilities, with separate caregiver and youth skill-building curricula and a family curriculum (see Brody et al., 2004, for a detailed description of the sessions and curricula). Ten teams, each of which included three African

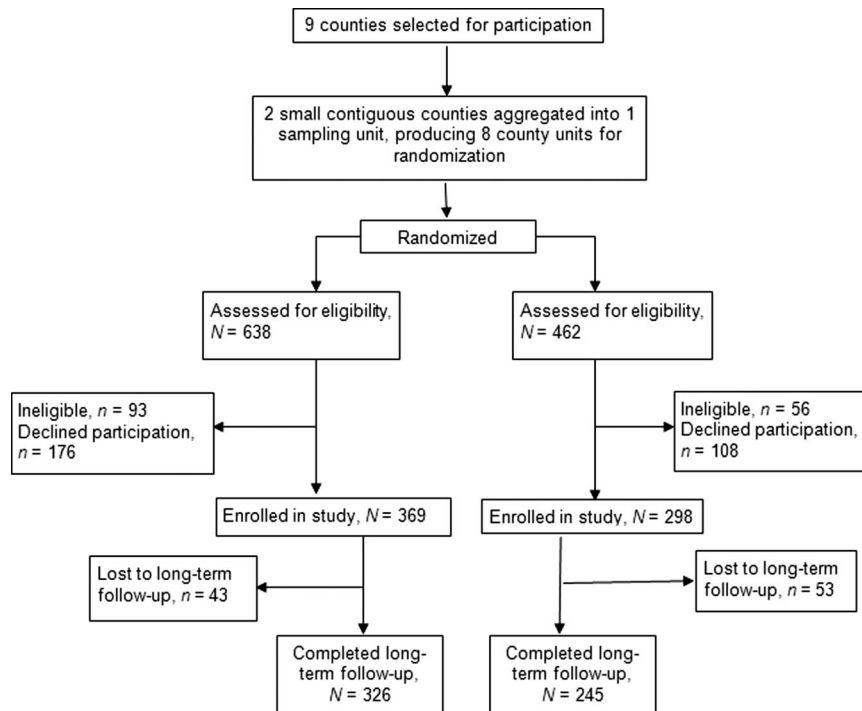


Figure 1. CONSORT diagram.

American group leaders, led 19 intervention groups. To assess fidelity to the prevention program, each team was videotaped while conducting intervention sessions; for each team, two parent, two youth, and two family sessions were selected randomly and scored for adherence to and coverage of the prevention curriculum. Interrater reliability checks were conducted on 23% of the fidelity assessments; intraclass correlations exceeded .80 for each of the three types of sessions. During the 7 weeks when the intervention group took part in SAAF, families in the control group received three leaflets through postal mail that dealt with various aspects of development in early adolescence, stress management, and suggestions for encouraging exercise.

Measures

Assessments of initiation of alcohol use and frequency of past-month alcohol use, drawn from the Monitoring the Future study (Johnston, O'Malley, Bachman, & Schulenberg, 2004), were administered at each data collection point. Youths were asked if they had ever drunk beer, wine, wine coolers, whiskey, gin, or other liquors; they were also asked how many times during the past month they had drunk any of these beverages. Youths were also asked whether they had ever drunk five or more drinks on a single occasion (binge drinking) and how many times during the past month they had done this. The proportion of the sample who had engaged in binge drinking, either lifetime or past month, was very small, less than 3%. Accordingly, the binge-drinking assessments were excluded from the data analyses.

Results

We used latent growth curve (LGC) modeling (Singer & Willett, 2003) to test the hypothesis that youths who participated in SAAF would evince a slower rate of increase in alcohol use across the long-term assessments than would youths in the control group. LGC calculates the mean and variance for the slope and intercept of alcohol use, treating the alcohol use intercept and slope as latent variables. Factor loadings for the intercept, or pretest (initial) level, are fixed to 1. The latent construct corresponding to change in past-month alcohol use varies according to the mathematical form being tested (e.g., linear, quadratic). We used a linear model in this study. A second set of analyses used structural equation modeling to test the hypothesis that long-term intervention-induced decreases in past-month alcohol use were mediated by the carryforward of intervention-induced reductions of initiation of alcohol use during early adolescence (the prevention effect). We used Mplus 5.1 (L. K. Muthén & Muthén, 1998–2007) to estimate the LGC and structural equation models. Because of the skewness of the alcohol use outcome (count data) and the binary nature (*yes, no*) of the alcohol initiation measure, we used Poisson distributions to estimate LGC and structural equation models for count and categorical outcomes (B. O. Muthén, 1996). For count and categorical models, chi-square-based model fit indices are currently unavailable. The prescription for ensuring the best model fit is to test a hypothesized model and determine whether alternative models attain lower values of model fit criteria for Bayesian models—Akaike information criteria and Bayesian information criteria (L. K. Muthén & Muthén, 1998–2007; Raftery, 1995). The hypothesized models attained the best (lowest) Akaike information

criteria and Bayesian information criteria model fit values for the conditional LGC model and the structural equation mediation model presented in Figure 2 (Akaike information criteria = 3,504.62; Bayesian information criteria = 3,554.15).

Test for Long-Term Prevention Effects

For the LGC analysis, we began by testing the measurement, or unconditional, model for the past-month alcohol use construct by fitting a univariate growth model. The model was based on reported levels of past-month alcohol use at the six assessments with the intercept specified by setting the factor loading for alcohol use to 1. The slope for the six reported values is a latent factor that reflects the number of years after the pretest that each assessment was obtained; the value for the pretest was 0. The variances for both the intercept (9.33) and the slope (0.20) were statistically different from 0, both $ps < .05$. Thus, the data met the assumptions for LGC modeling; alcohol use demonstrated linear growth over time, and participants varied significantly around the mean rate of growth.

A conditional LGC model was executed to test the hypothesis that group assignment would predict the rate of growth in alcohol use. The dependent measure for alcohol use for the six data points was the slope of past-month alcohol use. Group membership was dummy coded, with SAAF participants assigned a 1 and control participants assigned a 0, and the alcohol use slope was regressed on group membership. The results were consistent with predictions: Assignment to the SAAF condition was associated with a significantly slower rate ($\beta = -.23, p < .05$) of increase in alcohol use across the 65 months separating the first and sixth assessments. These analyses were re-executed with gender added as an exogenous predictor of growth; the results were unchanged. To illustrate the importance of this result, we calculated the mean frequency of past-month alcohol use as reported at the last long-term follow-up assessment for SAAF participants and control group youths. Youths who took part in SAAF drank an average of 0.68 times ($SD = 1.76$) during the past month, whereas youths in the control group drank an average of 1.41 times ($SD = 7.99$) during the same time period. Thus, control group youths drank twice as often as youths in the SAAF group at the last long-term follow-up assessment.

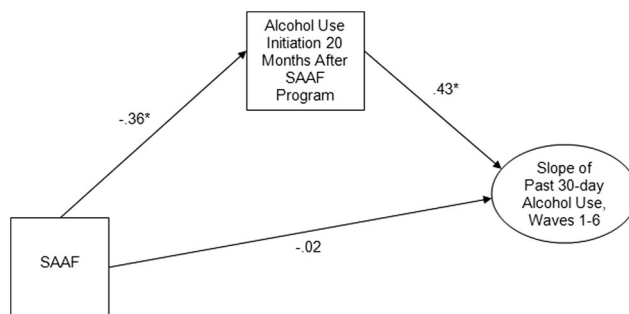


Figure 2. Results of the structural equation modeling analysis for the mediation hypothesis. SAAF = Strong African American Families program. * $p < .05$.

Test of the Prevention Carryforward Hypothesis

Structural equation modeling was used to test the hypothesis that the carryforward of SAAF-induced reductions in initiation of alcohol use would mediate the effect of treatment on the slope of the latent factor, past-month alcohol use. A group code approach was used for the analyses, wherein the SAAF group was dummy coded 1 and the control group was coded 0. A major advantage of this approach is that it requires half as many parameters as does the alternative multigroup approach. (For a detailed description of the group approach, see Aiken, Stein, & Bentler, 1994.) The structural equation modeling analysis, depicted in Figure 2 with standardized coefficients, reveals that, as hypothesized, youths in the SAAF group were less likely to have initiated alcohol use at the 29-month follow-up, which occurred 2 years after the youths took part in SAAF, than were control youths ($\beta = -.36, p < .05$; control group initiation = 43%, SAAF group initiation = 37%). Initiation of alcohol use carried forward to the slope of alcohol use ($\beta = .43$, a medium effect size); of particular importance for the mediational hypothesis, the effect of group assignment on the slope of alcohol use was no longer significant. Thus, for every unit increase in alcohol use initiation, we observed a corresponding .43 increase in the slope of past-month alcohol use. This finding supports the hypothesis that preventing alcohol use initiation for 2 years following participation in a prevention program carries forward to account for the effects of participation on past-month alcohol use across time.

Discussion

The results of this study suggest that SAAF participation slowed the growth in alcohol use over a period of 4.7 years after the conclusion of prevention training. Youths who participated in SAAF reported, 65 months after the pretest, drinking half as often during the past month than did similar youths in the control condition. This finding is important to public health professionals, scientists, practitioners, and clinical psychologists. To our knowledge, nowhere else in the literature is the efficacy of an alcohol use prevention program for African American youths demonstrated across the time span covered in this report. The alcohol use prevention literature includes few accounts of long-term effects; a notable exception is the work of Spoth and his colleagues (Spoth, Redmond, Shin, & Azevedo, 2004; Spoth et al., 2009), in which robust prevention effects emerged across 6 years for the Iowa Strengthening Families Program with Caucasian families in the Midwestern United States. SAAF shares many characteristics with the Iowa Strengthening Families Program, such as a focus on enhancement of protective family, caregiving, and communication processes. Together, these programs demonstrate the power of family-centered preventive interventions in deterring alcohol use in two diverse populations.

The reduction in past-month alcohol use that SAAF sponsors has important clinical and public health implications. From a public health perspective, the goal of programs for adolescents, like SAAF, is to shift the alcohol consumption curve so that fewer youths in the population distribution are frequent drinkers. This shift not only leads to decreases in drunk driving fatalities but also reduces other threats that adolescent alcohol use poses to mental health, academic engagement and achievement, and family relationships.

From a clinical perspective, the results suggest that an inoculation of protective parenting processes and self-regulatory skills during preadolescence may contribute to a self-sustaining trajectory of disinterest in and avoidance of alcohol use during adolescence when friends and acquaintances begin to model and sanction it. An advantage of imparting these protective processes through a universal prevention program such as SAAF is its avoidance of stigma. Neither youths nor their caregivers are enrolled in SAAF on the basis of pre-existing youth behavior problems, such as impulsivity, conduct problems, or academic difficulties. Caregivers and youths thus take part to promote youth well-being, a purpose that participants are more likely to embrace.

SAAF was designed to be developmentally well timed. The intervention began when the youths were entering preadolescence, a time when preoccupation with peer group acceptance increases (Collins, 1990). One of the program's goals was to provide parents and youths with skills that contribute to the development of protective factors at a time when adolescents must adapt to their autonomy strivings. Equipping youths at this developmental juncture with a set of self-regulatory skills that includes planning, a future orientation, and negative attitudes toward alcohol use (Brody, Murry, Gerrard, et al., 2006; Brody et al., 2004) increased their likelihood of avoiding risk-conducive contexts and selecting like-minded peers as friends. Provision of these protective capacities at this developmentally sensitive time was responsible for preventing alcohol use initiation, which carried forward over time.

This study was also designed to test the proposition that preventive intervention effects on deterrence of alcohol use initiation would carry forward to lower rates of alcohol use across adolescence. This hypothesis was confirmed. Consistent with the study's mediational hypothesis, the direct effect of SAAF participation did not directly forecast alcohol use when its prevention effect on initiation of use was included in the structural model. These results buttress the notion that deterring alcohol use initiation during preadolescence may be partially responsible for long-term effects that family-centered preventive interventions achieve. These results are also relevant to initiatives proposed by the U.S. surgeon general to stop underage drinking (U.S. Department of Health and Human Services, 2007). The surgeon general contended that youths who initiate drinking during preadolescence are at heightened risk for escalation of drinking during adolescence and for substance use disorders in adulthood, an assertion that epidemiological research supports (Hingson, Heeren, & Winter, 2006). The results of this study demonstrate, using an experimental design, that deterring the onset of alcohol use during preadolescence decreases use in subsequent years.

We do not know whether SAAF would be effective outside of the rural Southern areas for which it was developed because some of the prevention components it includes were selected in response to the particular needs of youths in that region. It would be possible to adapt SAAF for youths living in other areas, for example, urban settings, and then to evaluate its efficacy. Although we do not know how much adaptation would be necessary, we believe that only modest changes would be needed. It is also not known whether nonspecific factors, such as the disparities in time and personal attention devoted to the SAAF group and the control group, may have carried forward across 5 years to be responsible for the long-term effects that emerged. Although this seems unlikely, it remains an empirical question for prevention scientists to

address. These issues notwithstanding, the present results document the long-term impact of a preventive intervention designed to deter alcohol use among African American youths who live in challenging rural contexts.

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