A Parenting Program to Promote an Alcohol-Free Childhood: Influence on Parents' Readiness to Prevent Child Sipping

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ABSTRACT. Objective: This study reports effects of a parenting program to increase parents' readiness to socialize their children against early alcohol use. **Method:** A two-group randomized controlled trial was conducted with a nonprobability sample of 816 mothers. Participants were recruited from school districts located primarily in North Carolina and completed telephone interviews at baseline and 6 and 18 months after delivery of a parenting program to the treatment group mothers. Mothers reported on psychological indicators of readiness to prevent child alcohol use (e.g., attitude toward child sipping) and on parenting behaviors with potential to prevent such use (e.g., setting rules about child sipping). Multivariate analysis of variance models tested program effects on composite sets of psychological and behavioral outcomes; step-down analysis identified the individual outcomes driving overall program effects. Moderation of program effects by mother's alcohol use,

established beliefs about the consequences of child sipping, educational attainment, and race/ethnicity was tested. **Results:** The program had significant overall effects on each composite set of psychological and behavioral outcomes. Effects on psychological outcomes were moderated by mother's alcohol use, beliefs about the consequences of child sipping, and educational attainment; effects on the behavioral outcomes were moderated by mother's race/ethnicity. **Conclusions:** The parenting program had favorable, sustained effects on targeted outcomes intended to increase parental readiness to socialize children against early alcohol use. Mothers expected to be least receptive to the program—those who, at baseline, believed that allowing children to sip alcohol can have beneficial consequences—were most changed by it. (*J. Stud. Alcohol Drugs*, 77, 327–336, 2016)

IN THIS STUDY, WE DEVELOPED and evaluated an innovative parenting program to enable parents to promote an alcohol-free childhood. The program aimed to train parents to instill and reinforce attitudinal and behavioral norms against any underage use of alcohol, including sipping or tasting by children. The need for such a parenting program is underscored by studies showing that it is common for children to be exposed to actual alcohol use through parental allowance of child sipping or tasting (Andrews et al., 2003; Bush & Iannotti, 1992; Donovan & Molina, 2008; Jackson et al., 2012) and that such early exposure can increase risk of alcohol use and problem drinking during adolescence (Donovan & Molina, 2011; Jackson et al., 2015; Zucker et al., 2008). Key goals of the parenting program were to modify psychological factors (e.g., parental attitude about child sipping) and modify alcohol-specific parenting practices (e.g., offering sips of alcohol to children). We assess here the extent to which the program was successful in modifying these targeted parental factors.

We also examine whether any program effects were moderated by parents' own alcohol use, established beliefs about the consequences of allowing children to sip alcohol, or selected sociodemographic attributes.

We know of no evidence-based programs developed to engage parents in preventing the low level of consumption (i.e., sipping) characteristic of alcohol use when it occurs during childhood. Family programs to prevent alcohol use typically first reach youth in middle school (Spoth et al., 2009). Few preventive interventions have targeted alcohol use among children younger than age 10 (Loveland-Cherry et al., 1999; Spoth et al., 2009), even though such children develop expectations about drinking that can set the stage for early onset (Andrews et al., 2008; Masten et al., 2009; Simons-Morton, 2004; Zucker et al., 2008). Intervention that increases parental readiness to provide protective alcohol-specific socialization in childhood could reduce the risks of early-onset alcohol use (Zucker et al., 2008).

Sipping alcohol in childhood

Childhood sipping almost invariably takes place in the family context, most often when children taste drinks that belong to a parent (Donovan et al., 2004; Hipwell et al., 2005; Jackson et al., 1997, 2012; Warner & White, 2003). From a socialization perspective, sipping the drink of a consenting adult can be a powerful learning experience. That is,

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being allowed to sip the drink of a parent, or to sip the drink of another person in the presence of a parent, could instill the belief that parents approve of, or at least will not punish, alcohol use. Moreover, once parentally sanctioned sipping has occurred, a behavioral precedent has been established that makes persistent sipping—and concomitant pro-drinking socialization—more likely. Although sipping others' drinks involves a low level of alcohol consumption, it marks a major transition in children's socialization experience regarding alcohol use.

Parental alcohol socialization of children

Research on parental involvement in alcohol-specific socialization of school-aged children is limited. A cross-sectional study found that parental monitoring and fourth-grade children's alcohol refusal self-efficacy were negatively related to child use and that parental permissiveness and children's expectancies were positively related to child use (Loveland-Cherry et al., 1996). A longitudinal investigation that followed a cohort from age 10 to age 17 found that alcohol-specific socialization affected the age at alcohol use initiation, which, in turn, predicted alcohol misuse in late adolescence (Hawkins et al., 1997). More recently, a cross-sectional study of parental socialization practices reported that mothers' disapproving attitude about child sipping, mother-child communication about alcohol use, and family rules about child sipping were associated with lower child susceptibility to initiating alcohol use (Ennett et al., 2013). A recent longitudinal study reported similar findings: parent-reported approval of child sipping and children's perceived parental approval both predicted initiation of sipping among children followed from ages 8 or 10 to age 12 (Donovan & Molina, 2014).

In the current study, we analyze effects of the parenting program on psychological indicators of parental readiness to prevent child alcohol use and on parenting behaviors with potential to prevent child sipping. The psychological indicators include attitude about child alcohol use, defined as parents' overall favorable or unfavorable opinion about allowing children to sip alcohol; beliefs about the harms of teen alcohol use; and efficacy beliefs, defined as parents' confidence that they can perform recommended socialization activities (self-efficacy beliefs) and that such activities can lower children's exposure to alcohol (response-efficacy beliefs). The behavioral indicators include alcohol-specific communication, rule setting, and monitoring, as these practices relate to preventing children's use of alcohol.

Potential moderators of parental alcohol socialization

How parents respond to a parenting program that promotes an alcohol-free childhood could vary by their beliefs about the consequences of child sipping. Substantial

proportions of parents hold beliefs that allowing children to sip alcohol can have beneficial consequences (Jackson et al., 2012). In the only available study of parents' beliefs about the consequences of allowing school-aged children to sip alcohol, Jackson et al. (2012) found, for example, that at least one in four mothers believed that sipping is a deterrent because children will not like the taste or because the "forbidden fruit" appeal of alcohol will be diminished. Parents who hold such beliefs could be less responsive to a parenting program that promotes an alcohol-free childhood, or they might respond to the program differently than parents who do not hold such beliefs. Thus, in the current study, we assessed whether parents' established beliefs about the consequences of allowing children to sip alcohol moderated program effects on parental readiness to provide alcohol-specific socialization to children.

Parents' response to the program could also vary by their own alcohol use. Parents who use alcohol relatively infrequently might be more inclined than those who drink more frequently to assume that their children have little opportunity to be exposed to alcohol in a family context. Such parents might perceive the program objectives, such as limiting children's opportunity to try alcohol at home, as less relevant to their family. We therefore also assessed parents' frequency of alcohol consumption as a moderator of program effects.

Apart from these alcohol-specific factors, parents' race/ethnicity or educational attainment could influence how they implement the program and thus moderate program effects. Research indicates that cultural norms associated with both parenting in general (Hill & Tyson, 2008) and alcohol socialization (Reimuller et al., 2011) can vary by race/ethnicity. African American parents, for example, may communicate less frequently with their children about alcohol than White parents (Reimuller et al., 2011). Prior research also shows that parents with higher education tend to be more tolerant of early exposure to alcohol than their sociodemographic counterparts (Ennett et al., 2001; Jackson et al., 2012; Reimuller et al., 2011), suggesting that parents with higher education might be less responsive to the program than parents with lower education. The current study examines these sociodemographic factors as potential moderators of program effects.

Method

Study design

We conducted a two-group randomized controlled trial of the parenting program with pairs of mothers/mother surrogates and their third-grade children. All study protocols were approved by the institutional review boards at the institutions of the investigators. Mothers provided written consent for their own and their children's study participation.

FIGURE 1. Parental participant flow diagram

A total of 72 school districts in North Carolina ($n = 68$), South Carolina ($n = 3$), and Tennessee ($n = 1$) allowed distribution of study recruitment materials by third-grade teachers; school districts were not otherwise involved in the research. A nonprobability sample of 1,155 eligible mothers returned recruitment materials to the RTI project office, of whom 1,077 (93%) were recruited for the trial and 1,050 (91%) completed baseline interviews (Figure 1). All mothers eligible for the trial had consumed alcohol at least once in the past 3 years; at baseline, in the past month, 38%, 44%, and 18% had alcohol on no days, a few days, and 1 or more days per week, respectively. If mothers had more than one third-grade child, a random procedure was used to select a focal child about whom mothers would answer any child-oriented parenting question at baseline and at each follow-up interview.

Another 1,225 mothers returned recruitment materials but were not eligible for the trial (Figure 1). Of these, 677 mothers were deemed ineligible because they had a child age 13 or older; this was done to control for the effect that the parenting of teenagers—many of whom are engaged in alcohol use—could have on mothers' alcohol-specific socialization of younger children. Other reasons for ineligibility among the unrecruited mothers are delineated in Figure 1.

Mothers completed a baseline and two follow-up telephone interviews conducted 6 months (Wave 2) and 18 months (Wave 3) after core 5-month parenting program completion. Data for the current investigation are from those mothers who completed these three assessments ($n = 816$, 75.8% of the randomized sample; treatment $n = 404$, control $n = 412$).

Sample description

Most mothers (82.4%) lived in households shared with fathers/father surrogates. The majority of mothers were White non-Hispanic (70.4%) or Black non-Hispanic (21.1%); the remainder was divided between those who were Hispanic (4.5%) or of other race/ethnicity (3.9%). This race/ethnicity sample distribution is very similar to the population distribution in North Carolina (where 95% of cases resided; U.S. Census Bureau, 2012). Approximately half (53.8%) of mothers had a bachelor's degree or higher, with the remainder reporting some college or vocational training (34.0%) or high school graduation or lower (12.2%). Mothers with the highest education level are overrepresented in that approximately 27% of adult women in North Carolina have obtained a bachelor's degree or higher (U.S. Census Bureau, 2012). About equal proportions of mothers had a daughter (52.18%) or son (47.9%) in the trial. At baseline, approximately one third of the children (32.4%) had ever had a sip of alcohol.

Treatment program

The program comprised five pairs of magazines, with each pair consisting of a parent magazine and complementary parent-child activity magazine. The magazines were mailed at monthly intervals to parents and their 9- to 10-year-old children. The core program was followed by two pairs of annual booster magazines, the first delivered between follow-up Waves 2 and 3 and the second delivered after follow-up Wave 3. Control families received an alternative treatment: a family obesity-prevention program similar in format and delivery to the treatment program described below.

Each magazine pair had a main theme; themes were sequenced over the 5 months so that more readily accomplished program objectives were presented early. The first parent magazine was aimed at building parental engagement and commitment to the program. The second and third magazines addressed external influences on children, namely peer and media influences on alcohol use. The fourth and fifth magazines focused on family influences and included content related to setting family rules about child sipping, establishing an agreement with the child not to have any alcohol, and following practices within the immediate and extended family to monitor and prohibit child sipping. Details on the program development, theoretical foundation, and magazine content and format are described elsewhere (Dickinson et al., 2014).

Measures

Measures include study condition (1 = treatment, 0 = control, i.e., alternate treatment), the psychological and behavioral outcomes, and four potential moderator variables. Table 1 provides descriptive statistics for the outcome measures, including Cronbach's alpha.

Psychological outcomes include mother's attitude toward child sipping, perceived harms of teen alcohol use, self-efficacy to influence child use, and response-efficacy of anti-alcohol socialization. These measures had four response categories that were averaged, with higher average values indicating a more disapproving attitude about child sipping, greater perceived harms, and higher self- and response-efficacy. Mother's attitude was assessed using three items: approval/disapproval of her own child sipping and of sipping among children generally, and the age at which it is acceptable for children to sip; the four age categories were 10 or younger, 11–17, 18–20, and 21 or older. Perceived harms of teen alcohol use was measured by five items that asked about the likelihood of harmful consequences (e.g., doing less well in school) if, when the child becomes a teenager, he or she were to consume three to five drinks in a row at least once a month. Mother's self-efficacy was assessed by agreement with five items that assessed confidence in her ability to influence her child's alcohol use. Mother's response efficacy was measured by five items that assessed mothers' confidence that specific socialization practices can reduce children's early exposure to alcohol.

The behavioral parenting factors were permissiveness for child sipping, communicating with the child about alcohol, communicating about peer use and refusal skills, communicating about alcohol use promotion and portrayals in media, setting rules about child alcohol use, formalizing a parent-child agreement against child sipping, monitoring the home alcohol supply, and avoiding involving children in parental alcohol use. Parental permissiveness was based on four items measuring how often parents in the household let the child sip alcohol and mother's willingness to provide a sip if requested by the child. Higher values indicated greater permissiveness. Communication about alcohol use was formed from five items that measured how often the mother talked with the child on the subject of alcohol use, about, for example, the harmful consequences of use. Communication about peer alcohol use was indicated by two items related to how often the mother asked whether the child knew of peers who were using alcohol and how often she helped the child think about what to say or do if a friend wanted to try alcohol. Communication about media influences, such as talking with the child about how alcohol is portrayed on television, was measured with five items. All three communication measures used items with four response choices that ranged from *never* to *frequently*, with higher values indicating more frequent communication.

Family rules about child sipping was measured using two items that allowed the construction of an ordinal variable with three categories: the family had rules about what the child can do and had the specific rule that the child is never allowed to sip; the family had rules, but not a specific anti-sipping rule; the family had no rules about child sipping. Higher values indicated stricter rules. Whether the family

TABLE 1. Correlations and descriptive statistics for psychological and behavioral outcome variables at Wave 3 ($n = 816$)

Parental outcome	Psychological				Behavioral							
	1.	2.	3.	4.	1.	2.	3.	4.	5.	6.	7.	8.
Psychological												
1. Attitude toward child sipping	1.00	.18	.23	.30								
2. Perceived harms of teen alcohol use		1.00	.15	.11								
3. Self-efficacy to influence child alcohol use			1.00	.56								
4. Response efficacy of anti-alcohol socialization factors				1.00								
Behavioral												
1. Permissive alcohol use practices					1.00	-.07	-.07	-.03	-.23	-.18	-.03	.20
2. Communication about child alcohol use						1.00	.66	.55	.44	.33	.28	-.02
3. Communication about peer alcohol use							1.00	.56	.43	.41	.23	-.03
4. Communication about alcohol in the media								1.00	.32	.32	.19	-.04
5. Family rules about child alcohol use									1.00	.35	.18	-.05
6. No-alcohol-use agreement with child										1.00	.11	-.07
7. Monitor home alcohol supply											1.00	.03
8. Child involvement in parental alcohol use												1.00
Number items	3	5	5	5	4	5	2	5	2	1	3	2
Range	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	0–2	0–1	0–1	0–1
α	.75	.80	.62	.80	.74	.79	.71	.91	N.A.	N.A.	.82	.56
Treatment M (SD)	3.67 (0.50)	3.67 (0.45)	3.59 (0.37)	3.49 (0.44)	1.17 (0.38)	2.79 (0.65)	2.37 (0.80)	2.47 (0.78)	1.42 (0.88)	0.40 (0.49)	0.62 (0.49)	0.08 (0.27)
Control M (SD)	3.52 (0.64)	3.59 (0.52)	3.54 (0.41)	3.48 (0.45)	1.26 (0.44)	2.69 (0.73)	2.25 (0.88)	2.32 (0.87)	1.27 (0.94)	0.27 (0.45)	0.57 (0.50)	0.10 (0.30)

Notes: **Bold** correlations are significant at $p < .05$ or better; **bold** treatment and control means are significantly different at $p < .05$ or better. N.A. = not applicable.

had made a “no-alcohol-use” agreement with the child was measured by a single item, coded yes or no.

Whether the mother monitored the home alcohol supply was measured by three items that assessed, for example, whether the mother picked up glasses or bottles from which children could sip alcohol. Involvement of the child in parental alcohol use was assessed with two items related to how often the mother asked the child to bring her a drink or pour a drink for her. Mothers who responded affirmatively to either question were contrasted with those who responded *never* to both questions.

The potential moderator variables were mother’s alcohol use, beliefs about the consequences of child sipping, education, and race/ethnicity. Alcohol use was indicated by frequency of use in the past month—six response options ranging from *none at all* to *almost every day*. For moderation analysis, a dichotomous variable contrasting those in the top quartile of consumption (1) with those who drink less frequently (0) was used. Beliefs about the consequences of child sipping was assessed by agreement, on a four-point scale, with eight belief statements (e.g., that sipping at home provides children a safe introduction to alcohol). The total

score for the eight items was used to construct a dichotomous variable contrasting those in the top quartile, who were most strongly pro-sipping (1) with those in the bottom three quartiles (0). Educational attainment contrasted those who were high school graduates or less (0) with those who had completed some college or vocational training or higher (1). Mothers identified their race/ethnicity as non-Hispanic White, non-Hispanic Black, Hispanic, or other race/ethnicity. Because of the small sample sizes in the Hispanic and other race/ethnicity categories, the categories were collapsed into non-Hispanic White (0) and the other three categories combined (1).

Statistical analysis

Preliminary analyses tested baseline equivalence between the study condition groups on the outcome and moderator variables, assessment of attrition and differential attrition by study condition, and examination of univariate effects of treatment on the outcomes. Additional preliminary analyses examined correlations within the sets of psychological and behavioral parental outcome variables.

Because the main analysis is of treatment effects on multiple psychological and behavioral parental variables targeted by the parenting program, we used multivariate analysis of variance (MANOVA; Tabachnick & Fidell, 2013). We tested MANOVA models separately for the sets of psychological and behavioral variables because they represent distinct albeit interrelated targets of the intervention. We assessed whether there was an overall treatment effect for the set of four psychological outcomes and for the set of the eight behavioral outcomes. For each set, we next assessed moderation by testing whether the pattern of treatment effects differed for mothers depending on their alcohol use, beliefs about the consequences of child sipping, educational attainment, or race/ethnicity. We examined each potential moderator in a separate model. To test the significance of the main and interactive treatment effects, we reported the F test for Wilks' lambda.

We next applied a Roy-Bargmann step-down analysis to test treatment effects on the individual outcomes. The purpose of this analysis was to identify the individual outcomes that were primarily responsible for, or were the drivers of, significant treatment effects on the composite sets of psychological or behavioral outcomes (Tabachnick & Fidell, 2013). This approach requires the individual outcomes to be tested sequentially, following a theoretically specified ordering. Our ordering was based on the presumed importance of the outcomes for achieving overall program effects and on the sequencing of intervention content related to the individual outcomes (see ordering in Table 1). The highest priority dependent variable was tested first in a univariate analysis of variance (ANOVA); the remaining dependent variables were then tested in a series of analysis of covariance (ANCOVA) models with the higher priority dependent variables included as covariates. The approach accounts for the expected correlations between the outcomes. Because of multiple testing with the successive ANCOVAs, we adjusted the alpha level with the Bonferroni correction ($p < .0125$ and $p < .00625$ for the four psychological and eight behavioral outcomes, respectively). Because all overall treatment effects were significantly moderated by one or more of the potential moderators, we conducted the step-down analysis on the moderated models only. Analyses were conducted separately on the follow-up data collected from mothers at Waves 2 and 3; because the results were highly similar, only the Wave 3 results, which provide the better indication of maintenance of program effects, are reported. All analyses were conducted using SAS Version 9.2 (SAS Institute Inc., Cary, NC).

Results

Baseline equivalence, attrition, and differential attrition

Randomization resulted in baseline equivalence between the treatment and control groups on all measures. Attrition

analyses comparing those in the analysis sample ($n = 816$) with those who did not complete either or both follow-up interviews ($n = 234$) showed that mothers with low educational attainment were overrepresented among those lost to follow-up (i.e., they accounted for 12.25% of the analysis sample vs. 24.79% of those lost to follow-up), $\chi^2(1, n = 1,044) = 6.60, p < .0001$. There were no differences in attrition by race/ethnicity, alcohol use, beliefs about the consequences of child sipping, or any of the parental outcome variables.

The overall rate of attrition did not differ between treatment (23.48%) and control (21.07%). However, differential attrition was present for mother's alcohol use, self-efficacy to influence child alcohol use, and communication about child alcohol use. Within the control group, compared with counterparts, mothers who consumed alcohol more frequently, $\chi^2(1, n = 519) = 4.52, p = .03$, and who had lower self-efficacy to influence child sipping, $t(423) = -2.76, p < .006$, were more likely to drop out of the control group. Within the treatment group, mothers with higher scores on communication about alcohol use were more likely to drop out, $t(420) = 2.02, p = .04$.

Correlations among the parental outcome variables within sets

As expected, the four psychological variables were positively and significantly correlated with each other (Table 1). Similarly, most behavioral factors were significantly intercorrelated, with the exception of involvement of the child in parental alcohol use.

Initial assessment of program effects

As shown at the bottom of Table 1, univariate tests of each psychological outcome show significant differences favoring treatment over control on mother's attitude toward child sipping and perceived harms of teen alcohol use. There were also significant treatment effects in the expected direction on the majority of behavioral outcomes.

MANOVA results for the set of psychological variables

As shown in Table 2, Model 1 (left side of table), the parenting program had a significant overall effect on the composite set of four psychological outcomes. Subsequent models to test the interactions between study condition and each of the four putative moderators showed that the composite effect varied significantly by mothers' alcohol use (Table 2, Model 2), beliefs about the consequences of child sipping (Table 2, Model 3), and education level (Table 2, Model 4), but not by race/ethnicity (Table 2, Model 5).

Follow-up step-down analyses were conducted to determine which individual parental outcomes were responsible for the composite treatment effect within the subgroups defined by the aforementioned significant moderators. In

TABLE 2. MANOVA results: Main effect and moderated models for parental psychological and behavioral outcome sets at Wave 3 ($n = 816$)

Effect	Psychological set ^a				Behavioral set ^b			
	Wilks' λ	F	df	p	Wilks' λ	F	df	p
Model 1: Main effect								
Study condition	.97	5.31	4, 810	.0003	.96	2.96	8, 649	.003
Model 2: Moderation by mother's alcohol use								
Study condition	.96	7.79	4, 805	<.0001	.96	3.64	8, 644	.0004
Alcohol use	.96	8.63	4, 805	<.0001	.98	2.93	8, 644	.0032
Condition $\times$ Use	.99	2.77	4, 805	.0264	.98	1.45	8, 644	.1705
Model 3: Moderation by mother's beliefs about consequences of sipping								
Study condition	.96	9.08	4, 808	<.0001	.96	3.72	8, 647	.0003
Consequences beliefs	.76	64.87	4, 808	<.0001	.79	22.02	8, 647	<.0001
Condition $\times$ Consequences Beliefs	.99	2.96	4, 808	.0190	.98	1.35	8, 647	.214
Model 4: Moderation by mother's education								
Study condition	.96	8.42	4, 808	<.0001	.99	1.05	8, 647	.399
Mother education	.95	10.77	4, 808	<.0001	.96	3.66	8, 647	.0003
Condition $\times$ Mother Education	.97	5.60	4, 808	.0002	.99	0.80	8, 647	.600
Model 5: Moderation by race/ethnicity								
Study condition	.98	4.13	4, 807	.003	.98	1.34	8, 647	.219
Race/ethnicity	.93	13.36	4, 807	<.0001	.99	1.99	8, 647	.435
Condition $\times$ Race/Ethnicity	.99	1.52	4, 807	.152	.96	3.25	8, 647	.001

Notes: MANOVA = multivariate analysis of variance. ^aThe psychological set includes mother's attitude toward child sipping, perceived harms of teen alcohol use, self-efficacy to influence child use, and response-efficacy of anti-alcohol child socialization practices; ^bthe behavioral set includes permissiveness for child sipping, communication with the child about alcohol, communication about peer use and refusal skills, communication about alcohol use in the media, family rules about child sipping, use of a no-child-alcohol use agreement, monitoring of the home alcohol supply, and involvement of the child in parental alcohol use.

all three models, mother's attitude toward child sipping, the highest priority psychological outcome, was the only outcome accounting for the treatment effects in the subgroups defined by high frequency alcohol use, both nonpositive and positive beliefs about the consequences of child sipping, and high educational attainment (Table 3). Mother's perceived harms of teen alcohol use uniquely accounted for the treatment effect among mothers with low educational attainment. In all instances, these program effects were in the expected direction of stronger socialization against child alcohol use.

Because program effects on mother's attitude toward child sipping were present for both mothers who did and did not endorse positive consequences of child sipping, we probed this finding. At baseline, mothers who strongly endorsed positive consequences of child sipping held less of a disapproving attitude toward child sipping than mothers who did not ($M = 2.82$, $SD = 0.87$ and $M = 3.67$, $SD = 0.46$, respectively). At follow-up, treatment group mothers in the two belief categories reported a more disapproving attitude ($M = 3.30$, $SD = 0.66$ and $M = 3.81$, $SD = 0.35$, respectively). As indicated by the mean scores, however, mothers who had strongly endorsed positive consequences of child sipping changed their attitude by a larger margin, accounting for the significant interaction.

MANOVA results for the set of behavioral variables

As shown in Table 2, Model 1 (right side of table), the parenting program had a significant overall effect on the

composite set of eight behavioral outcomes. The models testing for moderation of this overall treatment effect found no moderation by mothers' alcohol use (Table 2, Model 2), beliefs about the consequences of child sipping (Table 2, Model 3), or education (Table 2, Model 4). The overall treatment effect was moderated, however, by mother's race/ethnicity (Table 2, Model 5).

Step-down analysis examining race/ethnicity differences in the overall treatment effect showed that among White non-Hispanic parents, the composite behavioral effect was driven by significant unique and favorable effects on parental permissiveness toward child sipping (the highest priority behavioral variable), communication about peers and alcohol use, communication about alcohol promotion and portrayals in the media, having family rules about child sipping, and having made a no-alcohol-use agreement with the child (Table 3). None of the individual behavioral outcomes showed a statistically significant treatment effect for parents of other race/ethnicity.

Discussion

Results of this randomized controlled trial demonstrated sustained effects of the parenting program on multiple targeted outcomes intended to increase parental readiness to socialize children against early alcohol use. The program had positive effects on mothers' psychological and behavioral readiness to prevent child sipping, as measured 18 months after completion of the core program. Program effects did

TABLE 3. Step-down analysis results: *p* values for tests of the parenting program effect on individual parental outcomes for MANOVA models that demonstrated program effects on the composite set of outcomes

Parental outcome	MANOVA models							
	Condition × Alcohol Use		Condition × Consequence Beliefs		Condition × Mother Education		Condition × Mother Race/Ethnicity	
	Low (<i>n</i> = 669)	High (<i>n</i> = 143)	Not positive (<i>n</i> = 607)	Positive (<i>n</i> = 209)	Low (<i>n</i> = 100)	High (<i>n</i> = 716)	White non-Hispanic (<i>n</i> = 574)	Other (<i>n</i> = 241)
Psychological								
Attitude toward child sipping	.0192	<.0001	.0025	.0003	.0495	.0011	—	—
Perceived harms of teen use	.0563	.1527	.0524	.1947	.0004	.3919	—	—
Self-efficacy to influence child alcohol use	.3260	.0139	.0949	.2957	.9317	.0431	—	—
Response-efficacy of anti-alcohol socialization factors	.6191	.0498	.8666	.2807	.0328	.3913	—	—
Behavioral								
Permissive alcohol use practices	—	—	—	—	—	—	.0010	.6492
Communication about child alcohol use	—	—	—	—	—	—	.0238	.7311
Communication about peer alcohol use	—	—	—	—	—	—	<.0001	.0164
Communication about alcohol in the media	—	—	—	—	—	—	.0007	.7473
Family rules about child alcohol use	—	—	—	—	—	—	<.0001	.4223
No-alcohol-use agreement with child	—	—	—	—	—	—	<.0001	.0856
Monitor home alcohol supply	—	—	—	—	—	—	.0445	.7161
Child involvement in parental alcohol use	—	—	—	—	—	—	.4068	.6136

Notes: The effect of the parenting program on the parental psychological or behavioral outcome listed first is tested in an analysis of variance model; program effects on subsequent parental outcomes in the set are tested in analysis of covariance models with the preceding variable(s) included as covariates. MANOVA = multivariate analysis of variance. **Bold** entries are significant at the Bonferroni-corrected level of $p < .0125$ for the psychological outcomes and $p < .00625$ for the behavioral outcomes.

vary, however, by mothers' alcohol use, beliefs regarding the positive consequences of allowing children to sip alcohol, educational attainment, and race/ethnicity. As elaborated below, mothers who might have been thought to be least receptive to a program promoting an alcohol-free childhood benefited most from it.

Although it is important to demonstrate that this type of home-based parenting program can have a significant effect on mothers' readiness to prevent early alcohol use, it is also important to evaluate whether the program was experienced differently by subgroups of mothers defined by the moderators. Our analytic approach allowed us to identify the attributes of the mothers most affected by program exposure. We expected that mothers who strongly endorsed positive consequences of allowing children to sip alcohol, had attained higher education, or were White non-Hispanic would be less responsive to the program than mothers who did not endorse positive consequences of child sipping (Jackson et al., 2012), had lower education (Ennett et al., 2001; Jackson et al., 2012; Reimuller et al., 2011), or were of other race/ethnicity (Reimuller et al., 2011). We also expected that mothers who used alcohol infrequently might perceive the program objectives as less relevant to their children and would therefore be less responsive to it.

The first set of expectations was not upheld. Significant

program effects were present in those subgroups expected to be least responsive to the program: namely, mothers who had endorsed positive consequences of sipping, were more highly educated, and were White non-Hispanic. Program effects were not detected in their counterparts, except that mothers with low education perceived greater harms of teen drinking, and those who did not endorse positive consequences of sipping also reported significantly more disapproving attitudes toward child sipping after program exposure. Even so, the margin of change among this latter group of mothers was less than that observed among mothers who had endorsed positive consequences of child sipping.

For the set of psychological outcomes, only one outcome, attitude toward child sipping, accounted for the overall program effects in nearly all subgroups examined. In contrast, several behavioral outcomes uniquely accounted for the overall effect on the composite set of behavioral outcomes for non-Hispanic White mothers. The predominant behavioral outcome targeted by the program, parents' actual allowance of child sipping, was positively influenced by the program, as were other behavioral practices (i.e., communicating with the child about alcohol use by peers and as portrayed in the media, setting rules about child use, and making a no-alcohol-use agreement). Why non-Hispanic White mothers responded to the program in this manner while mothers of

other race/ethnicities did not is unknown. Perhaps mothers of other race/ethnicities felt they were already socializing their children not to use alcohol, or perhaps these parents were less engaged with the program. Alternatively, the households of non-White mothers could have been more likely to include other adults, who could have had more a lenient attitude toward child sipping.

Expectations regarding moderation of program effects by mother's alcohol use were upheld. There were no program effects on the psychological or behavioral outcomes among mothers who used alcohol infrequently. Future research should assess why such mothers were unresponsive. If, for example, the lack of effect was because of the belief that children whose parents do not drink are not at risk for initiating alcohol use, then the program could be modified to address this precursor of parental readiness. Follow-up research on how the program was experienced by mothers with varying alcohol use habits, as well as by the other moderator variables, is needed to inform how the program might be revised to engage all parents.

Considered together, our findings show that favorable effects of the parenting program on mothers' readiness to promote an alcohol-free childhood were present for subsets of parents defined by the four moderator variables, but they differed in the particulars. As already noted, of most importance is the recurrent finding that mothers who were expected to be less receptive to the program content benefited the most from it. These findings speak to the potential of parenting programs to influence parenting factors presumed to determine early exposure to alcohol among school-aged children.

Our implementation of a randomized controlled trial with relatively high participation rates, adjustment for the correlations among the outcome variables, and assessment of program effects on mothers 18 months after the core program lend credence to the conclusion that the parenting program altered the family environment in ways intended to support an alcohol-free childhood. Several study limitations should be considered, however. Regarding the analysis, we examined each of the four moderators in separate models rather than including all moderators in a single model. There was differential attrition on only three variables, but this included disproportionate loss from the treatment group of mothers who communicated frequently with their children about alcohol and loss from the control group of mothers who were more frequent alcohol users and had lower self-efficacy, any of which could bias results. As regards measurement, it would have been more informative not to collapse mothers of other race/ethnicity than non-Hispanic White into a single category, but sample size was a concern here. In addition, the measurement protocol did not include assessment of use of program materials by mothers in the treatment condition. Such data would have enabled a more informative interpretation of the study

findings by, for example, indicating whether degree of use varied by mothers' race/ethnicity. Last, the sample was a nonprobability sample, which limits the generalizability of the findings. Mothers were more highly educated than the general population in North Carolina and, as volunteers, were more likely to take advantage of the opportunity to participate in such a prevention program than mothers in general.

Despite these limitations, our examination of program effects demonstrates that mothers—even mothers with pre-established beliefs counter to the essential purpose of the program—were receptive to the program and changed in ways known to be protective against child sipping. This is important because family alcohol-prevention programs for school-aged children are rare, despite growing recognition that youth alcohol use is a developmental process that begins in childhood and that parents are the primary agents of alcohol-specific socialization of children. If our planned follow-up investigation indicates that the program is effective in influencing child initiation of alcohol use, the program could be disseminated with some confidence that parents will have increased readiness and capacity to promote an alcohol-free childhood.

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