

# Youth Audience Segmentation Strategies for Smoking-Prevention Mass Media Campaigns Based on Message Appeal

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Mass media interventions are among the strategies recommended for youth cigarette smoking prevention, but little is known about optimal methods for reaching diverse youth audiences. Grades 4 through 12 samples of youth from four states ( $n = 1,230$ ) rated smoking-prevention messages in classroom settings. Similar proportions of African American, Hispanic, and White youth participated. Impact of audience characteristics on message appeal ratings was assessed to provide guidance for audience segmentation strategies. Age had a strong effect on individual message appeal. The effect of gender also was significant. Message ratings were similar among the younger racial/ethnic groups, but differences were found for older African American youth. Lower academic achievement was associated with lower appeal scores for some messages. Age should be a primary consideration in developing and delivering smoking-prevention messages to youth audiences. The unique needs of boys and girls and older African American adolescents should also be considered.

**Keywords:** *smoking; tobacco; adolescent behavior; mass media; segmentation; intervention studies*

Mass media interventions are among the strategies that have demonstrated positive effects on youth smoking prevalence and are recommended for implementation by public health practitioners (Centers for Disease Control and Prevention [CDC], 1999; Task Force on Community Preventive Services, 2001; U.S. Department of Health and Human Services, 2000). The audiences for smoking-prevention media campaigns are

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diverse, however, raising questions about the need for separate targeting of subgroups with common interests and message preferences rather than a single set of messages for the entire youth audience.

Unlike message tailoring, in which personal data are used to address needs of specific individuals as in direct mail or Internet campaigns, targeting is used to design messages that reach the broadest possible audience segments needed to achieve campaign objectives. This approach balances the potential effectiveness of targeted messages with the efficiency of limited numbers of separate groups for whom specific messages are developed and delivered. The goal of the present study was to clarify the need to define segments within the broad Grades 4 through 12 youth audience that should be targeted separately to enhance the effectiveness and efficiency of mass media smoking-prevention campaigns.

Audience segmentation is a major concept of commercial marketing that has been incorporated into health communication and social marketing principles and practice (Slater, 1995; Swinehart, 1997; Weinstein, 1994). Two qualities have been recommended to define meaningful audience segments: (a) Members of a segment should share similar antecedent qualities that influence health behavior and permit development of messages meeting their communication needs and interests, and (b) these members can be reached through similar media channels (Slater, 1995).

Strategies recommended for defining audience segments have included demographic, psychosocial, lifestyle, or media-content-preference criteria (Grunig, 1989; Maibach, Maxfield, Ladin, & Slater, 1996; Rust, Kamakura, & Alpert, 1992). Limited information is available, however, to assist media campaign designers in deciding what, if any, segmentation strategy should be used to most effectively reach young audiences with cigarette-smoking-prevention media campaigns. This study is based on a unique opportunity to compare segmentation strategies based on differences in youth audience responses to a varied group of smoking-prevention messages. Five potential youth-audience-segmentation strategies based on demographic and behavioral antecedent qualities were suggested by the literature and prior experience with media planning for youth audiences.

Rapid changes associated with puberty and the assumption of new roles during adolescence suggest the need for segmentation at three age levels (E. Austin, 1995; Newman & Newman, 1986; Steinberg, 1999). The cigarette-smoking environment changes rapidly among a peer cohort as it matures and can help to define age groupings that represent stages of social and psychological development. Preadolescence (ages 9 to 11) is an early stage of engagement in the smoking issue when there is some experimentation with cigarettes but little regular smoking (Flynn, Worden, Secker-Walker, Badger, & Geller, 1995). A second group can be identified for early adolescence (ages 12 to 13) when many youth experiment with smoking and some become regular smokers. An older age group can be identified for ages 14 to 18 when more youth are regular smokers and others are encountering smoking influences for the first time.

Rates of adolescent development differ substantially by gender. Earlier progression into puberty by girls, development of changed roles and identities at earlier ages, increased association with older males, and concerns with issues such as weight gain produce substantial differences in smoking education needs (S. B. Austin & Gortmaker, 2001). In previous research, responses to messages addressing male preferences for action-oriented material and female preferences for social interaction content reflected these differences in lifestyle interests (Worden et al., 1996; Wright et al., 2001). Gender preferences for message content also interact with age regarding factors such as adolescent

egocentrism, suggesting that adolescent females are more likely to be preoccupied with themes based on an “imaginary audience” and adolescent males with those portraying a “personal fable” (K. Greene, Kremar, Rubin, Walters, & Hale, 2002).

Although research literature on the design of smoking-prevention interventions for African American and Hispanic youth is limited (Ramirez, Gallion, Espinoza, McAlister, & Chalela, 1997), recent surveys have pointed to racial and ethnic differences in smoking adoption, with African American and Asian youth at substantially lower adoption levels than White or Hispanic youth (Blum et al., 2000; Unger, Palmer, Dent, Rohrbach, & Johnson, 2000). However, it has been observed by advertising professionals that innovations in youth styles originate in multi-ethnic urban centers, suggesting that youth in these settings be featured in ads also intended to appeal to suburban and non-Hispanic White youth populations (Appiah, 2001).

In a previous smoking-prevention project (Flynn et al., 1995), it was useful to identify a group of youth who were at increased risk of smoking because they had already experimented with smoking or lived in an environment including two or more smoking influences (i.e., parents, siblings, peers). Messages were created to appeal to their interests and were placed in media they preferred, and the campaign achieved greater declines in smoking rates among this group than among lower risk youth (Flynn et al., 1997).

Recent evidence suggests that the onset of cigarette smoking, as well as the use of other drugs, may be associated with low academic achievement (Jeynes, 2002). Adolescents who perceive their academic performance to be worse than their peers are more likely to be established smokers or to progress to established smoking (Choi, Pierce, Gilpin, Farkas, & Berry, 1997).

This study evaluated the relative importance of each of these potential segmentation strategies for smoking-prevention campaigns through systematic tests of interest in messages among samples of each segment. Message appeal, or “liking,” was used as a global indicator of positive affective response. This variable has been found to be associated with the persuasiveness of commercial advertising (Biel & Bridgewater, 1990; W. F. Greene, 1992) and has been identified by marketing researchers to be an important mediator of message effectiveness (Batra & Ray, 1986; MacKenzie, Lutz, & Belch, 1986). Study hypotheses were that differences in message appeal would be found by age group, gender, racial/ethnic group, cigarette-smoking risk, and academic achievement. The study was reviewed and approved by the Institutional Review Board of the University of Vermont.

## METHOD

This study was conducted in the context of a large trial of the impact of cigarette-smoking-prevention and cessation messages on youth smoking prevalence. A randomly selected set of smoking-prevention messages developed for the larger project was rated for message appeal by a diverse multistate sample of young people.

### Mass Media Messages

Television and radio messages used in this study were selected from a pool developed from 2000 to 2001 for diverse youth audiences in Grades 4 to 12. The messages were based on a common set of objectives drawn from social cognitive theory (Bandura, 1977; Baranowski, Perry, & Parcel, 1997), as follows: (a) Not smoking cigarettes is advantageous, (b) smoking cigarettes has disadvantages, (c) most young people don't

smoke, and (d) it is not difficult to avoid smoking in social situations. However, the messages were developed in a wide range of styles to appeal to audiences with diverse characteristics.

Focus groups, interviews, and surveys were conducted with small youth audience samples to assess perceptions of cigarette smoking and lifestyle and media preferences. Summary results, message objectives, and other guidelines were provided to 13 selected media producers. Producers created concept statements proposing messages that addressed the objectives and that would appeal to the intended audiences. An expert panel rated the concepts; those judged to meet the objectives and to be potentially appealing were selected for further development. Developed messages were presented to youth audience samples; participants rated their level of interest in each message and whether they thought the objectives were addressed. Messages rated as acceptable on these criteria were selected for production in broadcast form. The 31 cigarette-smoking-prevention messages developed through this process formed the pool from which test messages for the study were selected. A random selection of 13 messages was drawn from this pool; the 8 television and 5 radio messages comprising the test set are summarized in Table 1.

### **Participants**

Data for this study were obtained from a stratified sample of 1,255 youth aged 9 to 18 from four public school districts located in California, Texas, Florida, and the District of Columbia. These school districts served suburban or urban areas with household incomes below the national median and were not exposed to the mass media campaigns implemented by the main study. They also were selected to provide similar proportions of students from Grades 4 to 6, 7 to 8, and 9 to 12 as well as African American, Hispanic, and White youth. Students from four classrooms in each targeted age category in each district were recruited for a total of 48 classrooms. The student participation rate across these classrooms was 92.5%.

### **Message-Appeal Rating Procedure**

Message-appeal ratings were obtained through standardized procedures implemented in classrooms. Test messages were arranged on videotapes in four standard sequences assigned randomly to classrooms. After being introduced to the task, students completed anonymous descriptive questions on the back of a rating form. Messages were then shown individually without further introduction or comment. Students rated the message without discussion after each presentation. The procedures were implemented in three communities by a professional school survey team trained by project staff and by project staff in the fourth community.

### **Measurement**

Participants were permitted to indicate multiple racial/ethnic groups but were placed in a single category for the analysis. Those who indicated African American were considered African American even if they selected additional descriptors. Those indicating Hispanic were classified as such, regardless of additional descriptors (except for African American). Because of small numbers of Asians and others, they were combined with non-Hispanic Whites into a single category. Those at high risk for smoking consisted of students who indicated that they had ever smoked cigarettes or that two or more family

Table 1. Messages Selected for Segmentation Tests

## Selected Messages Produced for Grades 4 to 6

1. *The Jungle*. A cartoon shows a guy smoking a cigarette and coughing in a jungle while animals crack jokes about him: he's the only animal who's foolish enough to smoke. (TV)
2. *Talking Hand*. While walking in his suburban neighborhood, a goofy boy finds a pack of cigarettes. He takes one, but his hand (with a face on it) tells him that if he smokes, he's an idiot. (TV)
3. *We Asked 6th Graders*. Several students give reasons why they don't smoke. They say smoking is weird, stupid, and disgusting, and one boy says his dad doesn't smoke, and he's "cool!" (Radio)
4. *Sammy's Smoking*. Two brothers working on bikes in the backyard say they're disappointed that their friend, Sammy, started smoking, "lost all his moves," and now is off the team. (TV)
5. *Once Upon a Time*. A funny fairy tale tells a story about a princess who refuses a cigarette and lives happily ever after. (Radio)

## Selected Messages Produced for Grades 7 to 8

6. *In Our Own Words*. A mixed racial/ethnic group of young boys and girls make their own anti-smoking TV ad by telling the camera their own reasons why they don't smoke. (TV)
7. *Sister, My Sister*. Two African American sisters play basketball at a neighborhood court, and a guy offers them a cigarette. They say "no" and ask him to play but tell him he can't smoke and play at the same time, so he crushes the pack and they smile. (TV)
8. *Kids Speak*. Several middle-school students say things are good for them because they don't smoke. (Radio)
9. *Challenges*. In a humorous tale, a 13-year-old boy tells about the many ways he's challenged on a typical school day, but he says he can easily refuse smoking. (Radio)

## Selected Messages Produced for Grades 9 to 12

10. *Trick Biker*. High-energy split-screen views of boys doing tricks on BMX bikes on a hilly, dirt race course. An older biker says smoking would slow you down, throw you off balance, and keep you from doing your best. (TV)
11. *You've Got Your Hands Full*. A teenage boy planning his future catches things he'll want (graduation cap, steering wheel of a car) and dreams of two pretty girls. But he can't have them and hold a giant cigarette, too; so he tosses the cigarette—and the real girls appear. (TV)
12. *Posers*. Three girls of varied races/ethnicities hanging out at a bus stop smoke to be "stylish," but a cool African American guy who's passing by says, "I don't think so!" (TV)
13. *Statements*. In a party atmosphere, a happy bunch of high school students say they feel good, have fresh breath, and have teeth so white that you need sunglasses to look at them because they would never smoke—"Hell, no!" (Radio)

members or friends smoked; all others were considered low risk. Academic achievement was based on the students' self-reported grades, which were categorized as "mostly A's," "mostly B's," and a third group consisting of "mostly C's" and "mostly D's."

Message-appeal ratings were based on responses to a question asking the respondent to indicate how much she or he liked the particular message. The rating scale ranged from 0 (*did not like the message at all*) to 100 (*liked the message a lot*). Respondents were specifically instructed to use exact, not approximate or salient, appeal rating numbers (e.g., "You can use any number, like 29, or 73, or 7, or 98."). The "liking" measure provided a global assessment of message appeal that has been used by the investigators to select messages for media campaigns that have demonstrated positive behavioral impact (Flynn et al., 1994) and by marketing researchers (Batra & Ray, 1986; Biel & Bridgewater, 1990; W. F. Greene, 1992; MacKenzie et al., 1986).

## Statistical Analyses

Testing of hypotheses regarding media-message-appeal ratings was based on a repeated measures analysis of variance framework, with student characteristics and the community in which the student resided as the grouping factors and messages as the repeating factor. Ideally, this model would account for the selection of students from particular schools within each community; but because age group was confounded with school and could not be examined as a separate factor we elected to keep age group as a factor nested within community. Thus, age group, community, and message formed the base model on which other models were built by adding gender, race/ethnicity, smoking risk, or academic achievement. Expansion of the base model to include two or more additional factors simultaneously was limited by small cell sizes. All analyses were performed using SAS version 8.1 (SAS Institute Inc., 2000).

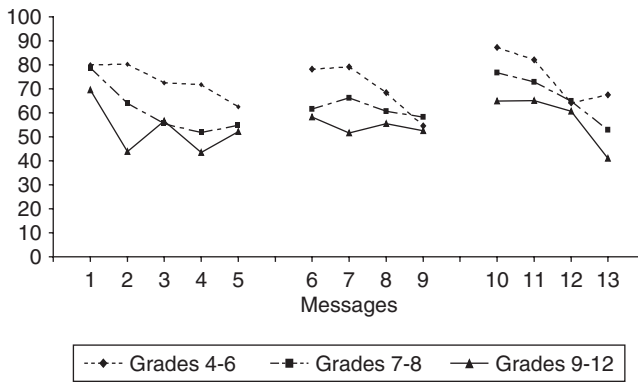
## RESULTS

A total of 1,255 youth participated in the study; 25 were deleted because their data for message appeal scores were incomplete, leaving an analysis sample of 1,230. An additional 19 students did not provide information on some characteristic of interest and were excluded from analyses where these data were required. Respondent characteristics matched the planned distributions except for community representation, which was 26%, 30%, 25%, and 18% across the four communities. Age groups were more evenly represented, with 37% from Grades 4 to 6, 30% from Grades 7 to 8, and 33% from Grades 9 to 12; females comprised 52% of the sample. For race/ethnicity, 34% were African American, 31% were Hispanic, and 34% were non-Hispanic White or from other groups. In addition, 55% were classified as high risk of smoking and 45% as low risk. For academic achievement, 32% reported having mostly A's, 47% mostly B's, and 21% mostly C's and D's.

Overall, raters gave favorable appeal scores to the individual messages. For the combined sample, all mean message-appeal scores were greater than the midpoint of the 0-to-100 scale, and 36 of the 39 individual message scores within age groups were greater than the midpoint. Television messages received generally higher ratings than did radio messages, with radio messages consistently less than the overall 63.2 mean score. There was clear variability of scores across messages, within messages across age groups, and within age groups across messages.

### Effects of Age on Message Ratings

Results of the base model analysis indicated a significant effect of age group on message appeal scores ( $p < .001$ ) and a significant message by age group (Message  $\times$  Age) interaction ( $p < .001$ ) when controlling for community. The main effect for age indicated that younger students were likely to give higher message-appeal ratings than were older students. The interaction between message and age indicated that the pattern of appeal ratings across the age groups varied by individual message (see Figure 1). It should be noted that the strong interaction between message and age also was observed in the models reported below, for which other factors were statistically controlled. The effects of age on message-appeal ratings were expected to be substantial and significant from previous experience. The major goal of this study was to examine the potential independent contributions of other factors to audience segmentation strategies.



**Figure 1.** Mean appeal scores for individual messages by age group.

### Effects of Gender on Message Ratings: Model 1

Model 1 assessed the impact of gender on message-appeal ratings while controlling for age and community. Overall message appeal ratings were similar for female and male participants, as shown by the nonsignificant gender effect (see Table 2). The significant Message  $\times$  Gender interaction ( $p < .001$ ) indicated, however, that appeal ratings for some individual messages varied for females and males. These effects were consistent across age groups, as indicated by the lack of a significant Message  $\times$  Gender  $\times$  Age interaction. Mean appeal scores for individual messages are displayed for each age group and gender in Figure 2. This test of the effects of gender on message-appeal ratings indicated that both genders generally rated messages similarly, but the appeal of some individual messages differed significantly by gender across all age groups.

### Effects of Race/Ethnicity on Message Ratings: Model 2

Model 2 assessed the impact of race/ethnicity on message-appeal ratings while controlling for age and community. Overall message-appeal ratings were equivalent for these three categories of participants, as shown by the nonsignificant race/ethnicity effect (see Table 2). However, appeal ratings for some individual messages differed by race/ethnicity category, with different patterns in different age groups, as indicated by the Message  $\times$  Race/Ethnicity  $\times$  Age interaction ( $p = .045$ ). The complex effects of race/ethnicity on message ratings were reflected in patterns showing greater concordance among message raters in the younger race/ethnicity age groups and more variability at older ages, particularly among the oldest African American raters.

### Effects of Cigarette-Smoking Risk on Message Ratings: Model 3

Model 3 assessed the impact of cigarette-smoking risk on message-appeal ratings while controlling for age and community. Overall message-appeal ratings differed significantly by level of risk ( $p = .017$ ), indicating that higher-risk raters generally scored messages lower. This pattern was consistent across ratings of individual messages as indicated by the lack of a significant Message  $\times$  Risk effect.

Table 2. Summary of Analysis of Variance Results

Effects	<i>df</i>	Sum of Squares	Mean Square	<i>F</i>	<i>p</i>
<i>Model 1: Gender</i>					
Between subjects					
Community	3	214,914.0	71,638.0	17.82	< .0001
Age group <sup>a</sup>	8	101,3831.9	126,729.0	31.53	< .0001
Gender	1	13,830.7	13,830.7	3.44	.0639
Gender × Community	3	10,264.4	3,421.4	0.85	.4660
Gender × Age	8	26,286.4	3,285.8	0.82	.5872
Subjects within groups	1,198	4,815,571.6	4,019.7		
Within subjects					
Message	12	745,835.2	62,152.9	94.16	< .0001
Message × Community	36	108,216.7	3,006.0	4.55	< .0001
Message × Age	96	482,556.5	5,026.6	7.62	< .0001
Message × Gender	12	96,018.5	8,001.5	12.12	< .0001
Message × Gender × Community	36	16,760.8	465.6	0.71	.9062
Message × Gender × Age	96	62,662.5	652.7	0.99	.5166
Within-subjects error	14,376	9,488,827.8	660.1		
<i>Model 2: Race/ethnicity</i>					
Between subjects					
Community	3	72,949.3	24,316.4	6.10	.0004
Age group	8	613,286.1	76,660.8	19.23	< .0001
Race	2	3,432.1	1,716.1	0.43	.6503
Race × Community	6	23,149.7	3,858.3	0.97	.4458
Race × Age	16	128,252.8	8,015.8	2.01	.0102
Subject within groups	1,186	4,728,679.6	3,987.1		
Within subjects					
Message	12	308,210.8	25,684.2	38.84	< .0001
Message × Community	36	44,073.7	1,224.3	1.85	.0014
Message × Age	96	312,006.6	3,250.1	4.92	< .0001
Message × Race	24	24,444.4	1,018.5	1.54	.0443
Message × Race × Community	72	53,678.0	745.5	1.13	.2156
Message × Race × Age	192	149,981.4	781.2	1.18	.0446
Within-subjects error	14,232	9,410,584.6	661.2		
<i>Model 3: Cigarette smoking risk</i>					
Between subjects					
Community	3	162,040.2	54,013.4	13.47	< .0001
Age group	8	783,553.8	97,944.2	24.43	< .0001
Risk	1	22,772.1	22,772.1	5.68	.0173
Risk × Community	3	10,210.4	3,403.5	0.85	.4672
Risk × Age	8	37,288.0	4,661.0	1.16	.3185
Subjects within groups	1,198	4,802,703.9	4,008.9		
Within subjects					
Message	12	659,764.4	54,980.4	82.49	< .0001
Message × Community	36	100,615.7	2,794.9	4.19	< .0001
Message × Age	96	452,560.4	4,714.2	7.07	< .0001
Message × Risk	12	5,350.8	445.9	0.67	.7829
Message × Risk × Community	36	25,542.1	709.5	1.06	.3648
Message × Risk × Age	96	67,346.0	701.5	1.05	.3431
Within-subjects error	14,376	9,581,738.8	666.5		

(continued)

Table 2. (continued)

Effects	<i>df</i>	Sum of Squares	Mean Square	<i>F</i>	<i>p</i>
<i>Model 4: Academic achievement</i>					
Between subjects					
Community	3	149,990.1	49,996.7	12.65	< .0001
Age group	8	748,349.6	93,543.7	23.67	< .0001
Academics	2	64,680.2	32,340.1	8.18	.0003
Academics × Community	6	12,753.9	2,125.7	0.54	.7796
Academics × Age	16	105,608.7	6,600.5	1.67	.0426
Subjects within groups	1,186	4,686,448.2	3,951.5		
Within subjects					
Message	12	589,827.7	49,152.3	74.24	< .0001
Message × Community	36	103,757.3	2,882.1	4.35	< .0001
Message × Age	96	407,168.2	4,241.3	6.41	< .0001
Message × Academics	24	22,842.1	951.8	1.44	.0764
Message × Academics × Community	72	55,238.8	767.2	1.16	.1689
Message × Academics × Age	192	176,106.0	917.2	1.39	.0004
Within-subjects error	14,232	9,422,778.3	662.1		

a. All effects of age group are nested within community, which prevents the examination of interactions between age group and community.

### Effects of Academic Achievement on Message Ratings: Model 4

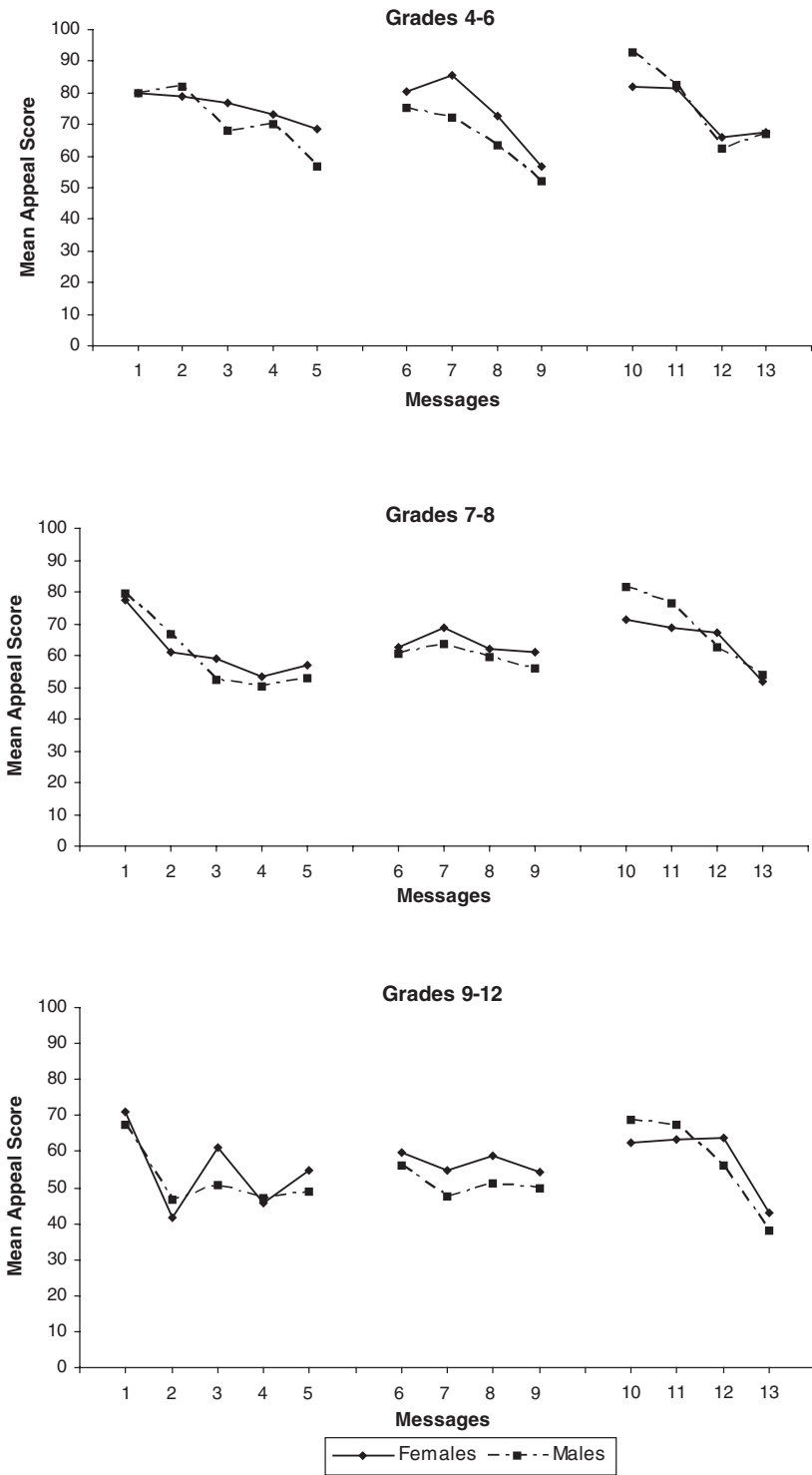
Model 4 assessed the impact of academic achievement on message-appeal ratings while controlling for age and community. Overall message-appeal ratings differed significantly by level of academic achievement ( $p < .001$ ), indicating that lower achievement was generally associated with lower message-appeal scores. Appeal ratings for individual messages also varied by level of achievement, with different patterns for different age groups, as indicated by a Message × Academic Achievement × Age interaction ( $p < .001$ ). These relationships were complex, with no clear trend in the rating patterns by age group.

## DISCUSSION

The results showed that some audience characteristics had a clear impact on how individuals responded to messages, whereas other characteristics appeared to have little or no impact. Results emerging from these ratings contribute to defining more effective and efficient strategies for targeting youth audiences with smoking-prevention messages through mass media.

### Main Effects of Audience Characteristics on Message Appeal

Older participants, those at higher risk for cigarette smoking, and those reporting lower academic achievement were likely to give lower message-appeal scores. The systematic effect of age group on scores was more powerful than the effects of the other factors. These results indicated that it might be more difficult generally to craft messages



**Figure 2.** Mean appeal scores for individual messages by gender and age group.

that are appealing to older youth, those at higher risk of smoking, and those reporting low academic achievement.

The participant characteristics of gender and race/ethnicity did not have a systematic effect on message-appeal ratings. Across a large group of messages, a diverse sample of female and male participants tended to give similar message-appeal ratings. Likewise, African American, Hispanic, and non-Hispanic White youth tended to give similar overall appeal ratings. These results indicate that, in general, messages can be crafted that are similarly appealing for both girls and boys as well as for African American, Hispanic, and non-Hispanic White youth.

### **Audience Characteristics and Individual Message Appeal**

Further exploration of these issues was provided by the tests for interactions between participant characteristics and individual messages. A particularly strong and consistent interaction was found between age and ratings for individual messages (see Figure 1). The interaction indicated that rater age had a significant impact on ratings for most of the individual messages (E. Austin, 1995). This result underscored the difficulty of crafting messages that are similarly appealing to all three age groups. The strength and consistency of this effect supports a conclusion that separate targeting of media campaigns to different age groups in the youth audience may contribute to campaign effectiveness by improving the match between the audience segment preferences and media message content.

Girls and boys in all three age groups tended to give different appeal ratings for a few, but not all, of the 13 messages (see Figure 2). This effect suggests that it is possible to develop messages that appeal equivalently to both genders and messages that appeal more strongly to each gender separately.

Two more complex interaction effects were found. The three-way interaction between message, race/ethnicity, and age was particularly interesting. Results showed that message-appeal ratings were very similar for African Americans, Hispanics, and non-Hispanic Whites or others in the youngest age group (Grades 4 to 6). In the oldest group (Grades 9 to 12), however, African American respondents gave appeal ratings for some messages that differed substantially while providing similar ratings for other messages. This result suggested the potential advantage of dedicating resources to providing some messages targeted to older African American youth audiences. Younger African American audiences appeared to share with other young audience groups a common level of enthusiasm for high-quality smoking-prevention messages.

Participants who identified themselves as Hispanic provided ratings similar to non-Hispanic White and other participants. Some exceptions could be identified, but no strong pattern was evident. It is possible that the lack of effect observed in this regard was because of a relatively low level of clear Hispanic themes and actors in the pool of test messages. This group should be considered as an important subject for future research on smoking-prevention message development and audience segmentation because of its unique cultural perspective and relative size.

A three-way interaction also was found for message, academic achievement, and age. Appeal scores given by younger low-achieving raters were particularly low for a few messages. A different pattern was found for older low-achieving raters who gave particularly low scores to other messages. Because the lower achieving group will be a source for a disproportionately large share of future smokers, it is important to ensure that this group is well represented in smoking-prevention message development processes.

## Implications for Practice

These results suggested that there were strong differences in appeal for individual messages across age groups and less powerful differences, or no differences, for other characteristics. Examination of results of these tests and the content of the messages for which differences were observed provided observations that could be useful to practitioners.

*Age of the Audience.* The results consistently pointed to the importance of differences in message appeal by age or developmental levels as important factors in design of youth smoking-prevention media campaigns. Each of the three age groups generally preferred different messages among the sample tested here. These findings support a strategy of creating separate media approaches for different age levels within this broad span of developmental differences. The findings also support the need to provide a particular focus on the needs of the older strata of the youth audience because of their generally lower ratings of these messages.

Interpretation of differences in specific message ratings by age group should take account of this strong overall effect of age on ratings. Although Message 9 (“Challenges”) and Message 12 (“Posers”) ratings appear in Figure 1 to be close in appeal across age groups, they actually show substantially lower appeal for younger students relative to their scores for other messages. As suggested by E. Austin (1995), students in Grades 4 through 6, at earlier stages of cognition and skill development, may have difficulty understanding the relatively complex social themes in these messages. Age differences are more evident for Message 2 (“Talking Hand”) that relies on unsophisticated humor for its primary appeal; this is among the highest rated messages for the youngest group and is second lowest for the oldest group. A similar spread of scores between younger and older students is noted for Message 7 (“Sister, My Sister”), which has a simple premise that smoking interferes with ability to participate in sports.

A few messages ranked high across age groups. Message 10 (“Trick Biker”) ratings had the highest ratings for the youngest and oldest groups, and second highest for the middle group (despite appearing to differ in Figure 1). Similarly, Message 1 (“The Jungle”) ratings were among the highest within all age groups. Examination of all messages showing substantial age differences when ranked within age groups suggest that those with complex social themes should be targeted toward older youth, but simple messages with strong graphic appeal (e.g., bike-jumping tricks or cartoon jungle animals) could appeal to youth across Grades 4 through 12.

*Gender of the Audience.* The results also indicate the importance of considering gender effects on message-appeal ratings. Although most messages had similar levels of appeal to girls and boys across the three age levels, some messages appealed more to one gender group or the other. These phenomena could be used to increase the efficiency of a campaign by creating messages that have similar appeal for both genders. Additional effectiveness could be sought, however, by developing some messages that have especially high appeal to each gender and placing these messages in appropriate media programming.

Gender differences in appeal may have been influenced by the gender of the lead actors. Message 7 (“Sister, My Sister”), with assertive female leads, was rated slightly higher by females than by males. Similarly, males rated Message 2 (“Talking Hand”), with a humorous male lead, higher than females did. Messages with social content, such as Messages 3 (“We Asked Sixth Graders”) and 12 (“Posers”) were somewhat more

appealing to females, and “action” messages like Message 10 (“Trick Biker”) had greater appeal for males. However, these differences were small, and “Trick Biker” was among the highest rated messages for both genders. These results suggest the importance of using actors from the same gender and more social themes for females and action themes for males if targeting by gender.

*Race/Ethnicity of the Audience.* Race/ethnicity did not appear to be a strong influence on message ratings except among older African American youth; the latter group may require special consideration in campaign development. The results did not provide a clear indication that Hispanic youth required a particularly strong separate focus in campaign design. African Americans in Grades 9 to 12 frequently reported message preferences different from Whites and Hispanics. They preferred messages with African American leading actors, such as Messages 6 (“In Our Own Words”) and 7 (“Sister, My Sister”), whereas they showed lower preferences for messages with White leads, such as Messages 4 (“Sammy’s Smoking”), 10 (“Trick Biker”), and 11 (“You’ve Got Your Hands Full”). Identification by African American youth with characters of the same racial/ethnic background in advertising messages has been reported previously by Appiah (2001) and Deshpande and Stayman (1994). These preferences suggest that messages for older students should take the race/ethnicity of leading actors into consideration.

*Cigarette-Smoking Risk and Academic Achievement.* The lack of an interaction between smoking risk and individual messages suggests that risk may not be a useful audience-segmentation factor for targeting by message content. All messages were rated lower by the high-risk youth; lack of success in identifying content of particular interest to this group poses a challenge, as previous research has underscored the importance of reaching high-risk youth through the mass media (Flynn et al., 1997).

Message-response variations by achievement level did provide some useful observations. Appeal scores for Messages 1, 7, and 11 were similar across achievement categories in the two older groups but appeared to be less for lower achieving raters in Grades 4 to 6. These messages had multiple and somewhat abstract concepts that may have been beyond the range of comprehension for pre-adolescents with low academic achievement. A different pattern was seen for Messages 3, 12, and 13, for which low achievers among the older raters tended to rate these messages lower, but ratings were similar across achievement categories in the younger groups. Message 12 (“Posers”) was a relatively sophisticated visual allegory that may have been too advanced for all younger raters as well as low achievers among the older youth, whereas Messages 3 and 13 were radio testimonials that may have required some extra concentration on the part of listeners.

Overall, youth with higher achievement more often preferred complex social themes. To reach the broadest spectrum of youth, including those who are academically challenged, it may be best to keep messages simple and approachable. Because of the generally lower message-appeal ratings from these groups and because of their significant contributions to the ranks of future smokers, they should be well represented in audience samples participating in message-development processes.

### **Strengths and Limitations**

Cigarette-smoking-prevention messages included in these tests were generally rated favorably by the youth audience samples. Although this result was presumed because of the message development and selection process that produced the messages, confirmation

of message appeal by independent, diverse samples of young people provided support for the soundness of this development strategy and the relevance of the tested messages. The substantial variability in individual message scores within the favorable range provided a context for productive exploration of youth audience segmentation issues. The samples of youth audiences were geographically diverse and were well distributed by the characteristics of interest. The tested messages were randomly selected from among a larger pool. Use of a common conceptual approach and development process for these messages controlled potential variability because of message-strategy considerations and maintained focus on the effects of audience characteristics on reactions to messages. Despite the common themes, these messages had varied presentation formats, execution styles, and characters. The messages were tested by trained professionals, who used a structured process in classroom settings. The main dependent variable of "liking" is a simple global construct that has been used previously to assess youth audience preferences for messages. The statistical and analytic design provided formal tests of the hypotheses that motivated the study.

The study had several limitations. Only five segmentation strategies were tested, although others, including sensation seeking and other psychological variables, might be used to more finely target messages. It must be acknowledged, however, that mass media are most efficiently used if ads can be created to appeal to the broadest feasible segments of the audience spectrum and that even smoking risk (which turned out to be less informative than was hypothesized) and academic achievement (which suggested that messages be made simpler for the more academically challenged) proved to be of limited utility for campaign planning.

The constraints of time in a school setting limited the number of messages that could be rated. Message content clearly identifiable as Hispanic was not well represented in the test messages, possibly reducing message-rating effects from Hispanic participants. We were unable to accommodate a focus on more than three major racial/ethnic groups. The sample size did not permit development of statistical models that included all independent variables simultaneously. Although we have explored the relationship between these results and message content, the qualitative analyses were not based on formal tests of these relationships. Ratings for radio messages were consistently lower, suggesting that we should test messages made for each medium separately. Finally, it should be emphasized that these are initial results based on the first tests of this type reported. Subsequent replications would strengthen conclusions drawn from these data.

## CONCLUSIONS

This study evaluated the relative importance of several potential youth audience segmentation strategies and provides guidance for practitioners about the need to target individual message content. It suggested three overall approaches to efficient use of mass media. The first is a global approach in which simple, more straightforward messages are created to appeal to youth in all age, gender, racial/ethnic, risk, and academic achievement levels. The second is an age-segmented approach, with less sophisticated messages targeted to the younger age group and messages with more complex social themes targeted to older age groups. A third approach could, in addition, target specific gender or race/ethnicity segments, which might be accomplished by featuring actors and lifestyles representing that gender or race/ethnicity group. Approaches such as these may contribute to achievement of mass media campaign objectives by improving the match between audience preferences and media message content.

## References

- Appiah, O. (2001). Black, White, Hispanic, and Asian American adolescents' responses to culturally embedded ads. *The Howard Journal of Communications*, 12(1), 29-48.
- Austin, E. (1995). Reaching young audiences: Developmental considerations in designing health messages. In E. Maibach & R. L. Parrot (Eds.), *Designing health messages* (pp. 114-141). Thousand Oaks, CA: Sage.
- Austin, S. B., & Gortmaker, S. L. (2001). Dieting and smoking initiation in early adolescent girls and boys: A prospective study. *American Journal of Public Health*, 91(3), 446-450.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavior change. *Psychological Review*, 84(2), 191-215.
- Baranowski, T., Perry, C. L., & Parcel, G. S. (1997). How individuals, environments, and health behavior interact: Social cognitive theory. In K. Glanz, F. M. Lewis, & B. K. Rimer (Eds.), *Health behavior and health education—theory, research, and practice* (2nd ed., pp. 153-178). San Francisco: Jossey-Bass.
- Batra, R., & Ray, M. L. (1986). Affective responses mediating acceptance of advertising. *Journal of Consumer Research*, 13, 234-249.
- Biel, A. L., & Bridgewater, C. A. (1990). Attributes of likable television commercials. *Journal of Advertising Research*, 30(3), 38-44.
- Blum, R. W., Beuhring, T., Shew, M. L., Bearinger, L. H., Sieving, R. E., & Resnick, M. D. (2000). The effects of race/ethnicity, income, and family structure on adolescent risk behaviors. *American Journal of Public Health*, 90(12), 1879-1884.
- Centers for Disease Control and Prevention (CDC). (1999). *Best practices for comprehensive tobacco control programs*. Atlanta, GA: U.S. Department of Health and Human Services (USDHHS), CDC, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health.
- Choi, W. S., Pierce, J. P., Gilpin, E. A., Farkas, A. J., & Berry, C. C. (1997). Which adolescent experimenters progress to established smoking in the United States? *American Journal of Preventive Medicine*, 13(5), 385-391.
- Deshpande, R., & Stayman, D. M. (1994). A tale of two cities: Distinctiveness theory and advertising effectiveness. *Journal of Marketing Research*, 31, 57-64.
- Flynn, B. S., Worden, J. K., Secker-Walker, R. H., Badger, G. J., & Geller, B. M. (1995). Cigarette smoking prevention effects of mass media and school interventions targeted to gender and age groups. *Journal of Health Education*, 26(2, Suppl.), 45-51.
- Flynn, B. S., Worden, J. K., Secker-Walker, R. H., Pirie, P. L., Badger, G. J., & Carpenter, J. H. (1997). Long-term responses of higher and lower risk youths to smoking prevention interventions. *Preventive Medicine*, 26(3), 389-394.
- Flynn, B. S., Worden, J. K., Secker-Walker, R. H., Pirie, P. L., Badger, G. J., Carpenter, J. H., et al. (1994). Mass media and school interventions for cigarette smoking prevention: Effects two years after completion. *American Journal of Public Health*, 84(7), 1148-1150.
- Greene, K., Kremar, M., Rubin, D. L., Walters, L. H., & Hale, J. L. (2002). Elaboration in processing adolescent health messages: The impact of egocentrism and sensation seeking on message processing. *Journal of Communication*, 52, 812-831.
- Greene, W. F. (1992). Observations: What drives commercial liking? *Journal of Advertising Research*, 32(2), 65-68.
- Grunig, J. E. (1989). Publics, audiences, and market segments: Segmentation principles for campaigns. In C. T. Salmon (Ed.), *Information campaigns: Balancing social values and social change* (pp. 199-228). Newbury Park, CA: Sage.
- Jeynes, W. H. (2002). The relationship between the consumption of various drugs by adolescents and their academic achievement. *American Journal of Drug and Alcohol Abuse*, 28(1), 15-35.
- MacKenzie, S. B., Lutz, R. J., & Belch, G. E. (1986). The role of attitude toward the ad as a mediator of advertising effectiveness: a test of competing explanations. *Journal of Marketing Research*, 23, 130-143.

- Maibach, E. W., Maxfield, A., Ladin, K., & Slater, M. (1996). Translating health psychology into effective health communication: The American Healthstyles Audience Segmentation Project. *Journal of Health Psychology, 1*(3), 261-277.
- Newman, B. M., & Newman, P. R. (1986). *Adolescent development*. Columbus, OH: Merrill.
- Ramirez, A. G., Gallion, K. J., Espinoza, R., McAlister, A., & Chalela, P. (1997). Developing a media and school-based program for substance abuse prevention among Hispanic youth: A case study of *Mirame!/Look At Me!* *Health Education & Behavior, 24*(5), 603-612.
- Rust, R. T., Kamakura, W. A., & Alpert, M. I. (1992). Viewer preference segmentation and viewing choice models for network television. *Journal of Advertising, 21*(1), 1-18.
- SAS Institute Inc. (2000). *SAS System for Windows* (8.1 ed.). Cary, NC: Author.
- Slater, M. D. (1995). Choosing audience segmentation strategies and methods for health communication. In E. Maibach & R. L. Parrot (Eds.), *Designing health messages: Approaches from communication theory and public health practice* (pp. 186-198). Thousand Oaks, CA: Sage.
- Steinberg, L. D. (1999). *Adolescence* (5th ed.). Boston: McGraw-Hill.
- Swinehart, J. W. (1997). Health behavior research and communication campaigns. In D. S. Gochman (Ed.), *Handbook of health behavior research, Vol. 4: Relevance for professionals and issues for the future* (pp. 351-373). New York: Plenum.
- Task Force on Community Preventive Services. (2001). Recommendations regarding interventions to reduce tobacco use and exposure to environmental tobacco smoke. *American Journal of Preventive Medicine, 20*(2S), 10-15.
- Unger, J. B., Palmer, P. H., Dent, C. W., Rohrbach, L. A., & Johnson, C. A. (2000). Ethnic differences in adolescent smoking prevalence in California: Are multi-ethnic youth at higher risk? *Tobacco Control, 9*(Suppl. 2), ii9-ii14.
- U.S. Department of Health and Human Services (USDHHS). (2000). *Reducing tobacco use: A report of the Surgeon General*. Atlanta, GA: USDHHS, CDC, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health.
- Weinstein, A. (1994). *Market Segmentation* (2nd ed.). Chicago: Probus.
- Worden, J. K., Flynn, B. S., Solomon, L. J., Secker-Walker, R. H., Badger, G. J., & Carpenter, J. H. (1996). Using mass media to prevent cigarette smoking among adolescent girls. *Health Education Quarterly, 23*(4), 453-468.
- Wright, J. C., Huston, A. C., Vandewater, E. A., Bickham, D. S., Scantlin, R. M., Kotler, J. A., et al. (2001). American children's use of electronic media in 1997: A national survey. *Journal of Applied Developmental Psychology, 22*(1), 31-47.