HEALTH EDUCATION RESEARCH Vol.29 no.1 2014
Pages 58–71
Advance Access published 22 August 2013

‘It’s about the smoke, not the smoker’: messages that motivate rural communities to support smoke-free policies

Ganna Kostygina[1], Ellen J. Hahn[2]* and Mary Kay Rayens[2]

[1]Center for Tobacco Control Research and Education, University of California San Francisco, San Francisco, CA, USA and [2]Tobacco Policy Research Program, University of Kentucky College of Nursing, Lexington, KY, USA

*Correspondence to: E. J. Hahn. E-mail: ejhahn00@email.uky.edu

Received on December 11, 2012; accepted on July 10, 2013

Abstract

Rural residents are exposed to sophisticated tobacco advertising and tobacco growing represents an economic mainstay in many rural communities. There is a need for effective health messages to counter the pro-tobacco culture in these communities. To determine relevant cultural themes and key message features that affect receptivity to pro-health advertisements among rural residents, 11 exploratory focus groups and surveys with community advocates ($N = 82$) in three rural Kentucky counties were conducted. Participants reviewed and rated a collection of print media advertisements and branding materials used by rural communities to promote smoke-free policies. Findings reveal that negative emotional tone, loss framing, appeals to religiosity, and shifting focus away from smokers are effective strategies with rural audiences. Potential pitfalls were identified. Attacks on smokers may not be a useful strategy. Health risk messages reinforced beliefs of secondhand smoke harm but some argued that the messages needed to appeal to smokers and emphasize health hazards to smokers, rather than to non-smokers only. Messages describing ineffectiveness of smoking sections were understood but participants felt they were only relevant for restaurants and not all public spaces. Emphasis on religiosity and social norms shows promise as a culturally sensitive approach to promoting smoke-free environments in rural communities.

Introduction

Although smoking prevalence has declined overall in the United States since the 1960s, rural communities still bear a disproportionate burden of tobacco use and tobacco-related illness. According to a recent report on ‘Tobacco Use in Rural Communities’ by American Lung Association, rural residents are more likely than urban dwellers to use tobacco and be exposed to secondhand smoke (SHS) [1]. Tobacco use and exposure to SHS are leading causes of death in the United States [1]. SHS is a mixture of sidestream (i.e. smoke from the lit end of a cigarette, pipe or cigar) and mainstream smoke (exhaled by a smoker) [2]. It contains more than 7000 chemical compounds; more than 250 of these chemicals are known to be harmful [2]. Exposure to SHS causes cancer, heart disease, respiratory illness and is the leading source of indoor air pollution, particularly in the workplace [2]. SHS is known to cause DNA damage and cancer in humans, as well as immediate damage to cells and blood vessels resulting in heart and lung disease [2]. Smoke-free policies protect non-smokers and workers from the harmful effects of SHS, contribute to the denormalization of smoking and decrease cigarette consumption [3–5].

Small rural communities have fewer resources, weaker tobacco control programs and less capacity to enact smoke-free policies [1]. In addition, tobacco growing and valuing individual freedoms are some of the most important forces influencing the economy and political climate in rural communities

doi:10.1093/her/cyt087

[6, 7]. Polarization may occur among rural policymakers, as well as among their constituents, as some may view smoke-free legislation as progressive while others may perceive it as part of government expansion and infringement on individual freedoms [8].

In addition to these challenges, residents of rural communities continue to be exposed to sophisticated tobacco advertising, despite increasing restrictions on tobacco marketing. For instance local public events, such as auto-races and rodeos, may have tobacco-sponsored adult-only booths that provide free tobacco samples, coupons and/or sign-ups for possible prizes [9]. Furthermore, the tobacco industry has for decades used rural imagery and cultural references, such as 'Marlboro Country' and the 'Marlboro Man', to promote its products and appeal to rural audiences by emulating cultural values of independence, freedom, adventure and heroism [1]. Cigarette companies have used industry-produced films and videos about tobacco farming to support their public policy agenda [10]. Imagery and narratives of tobacco farmers, tobacco barns and agricultural landscapes in industry videos have showed tobacco farming as a family and a national tradition as well as a source of jobs; tobacco companies have portrayed tobacco as a tradition to be protected instead of an industry to be regulated and denormalized [10].

Cigarette promotion expenditures by the manufacturers of cigarettes have increased by 48% since 1998, the year of the Master Settlement Agreement [11]. These expenditures have become increasingly concentrated on marketing efforts that reduce the prices of tobacco products [11], which can make tobacco products more affordable for lower income rural populations [12]. Tobacco companies promote their products through progressively more diverse media channels, including direct mail, print media, event sponsorship, retail outlets and the internet using innovative marketing strategies [13].

Print media campaigns may contribute to the success of smoke-free policies in rural areas; however, evaluation of their impact is sparse and studies have relatively weak designs [14]. Perceived effectiveness of advertisements predicts changes in attitudes and other behavioral antecedents related to the outcomes targeted by health messages [15]. Given the severity of the health outcomes of exposure to SHS, a belief in these consequences is likely to result in favorable attitudes toward smoke-free policies and intention to get involved in smoke-free activism [16]. Additional communication research on smoke-free message effectiveness and information needs among rural populations is vital to inform the development of smoke-free campaigns that are successful in countering the powerful tobacco marketing efforts and congruent with the cultures of rural audiences [17, 18].

There are many challenges to designing and testing effective campaign messages. First, researchers need a thorough understanding of the target audience. In regard to smoke-free campaigns, the primary target audience are non-smokers and middle-aged women as prior research has demonstrated that middle-aged women are more likely to be engaged in social change [19–21]. Similarly, non-tobacco users tend to be more open to engagement in smoke-free efforts than smokers [22]. Second, campaign messages need to attract and keep the attention of the target audience. Finally, the audience must comprehend and memorize the message and be able to retrieve the new information and use it [23].

Characteristics of advertising messages

Early research on tobacco control interventions has illuminated the critical features of effective anti-tobacco media interventions. Scholars in public health and health communication have examined individuals' responses to different types of anti-tobacco messages and have identified certain features that enhance message effectiveness. For instance, there is evidence that ads that activate strong negative emotions are better received and associated with decreased intention to smoke [24]. In addition to emotional tone, ad thematic content and appeal type are also important. Namely, advertisements with a light-hearted tone of information delivery use humor appeals, sports and leisure themes. Advertisements with a serious tone of information

delivery use fear and anger appeals, as well as disease and suffering as health risks [24–28]. For example, messages that use anger appeals and expose the manipulative and misleading nature of the tobacco industry and those that focus on the negative consequences of SHS were found to be effective [29]. Promotions that use graphic images are generally rated as more convincing than advertisements without striking imagery [30, 31].

Another critical characteristic is framing of the message. Framing theory suggests that the way information is presented (the 'frame') influences individual's decision-making [32]. For instance, tobacco control policy change can be promoted through positively framed messages (e.g. 'Smoke-free saves lives') or negatively framed ones (e.g. 'Five minutes of exposure to secondhand smoke makes it harder for the heart to pump blood') with the same goal—promoting support for smoke-free policies [33]. Framing is based on the Prospect Theory which posits that people tend to avoid risks (be risk-averse) when making decisions regarding choices involving gains, and are risk-seeking when making decisions regarding choices involving losses [32, 34]. The message-framing postulate has been used as an approach to tailor health interventions by emphasizing either the gains or losses as outcomes of health-related behaviors. Gain-framed messages emphasize the advantages or benefits of engaging in a recommended behavior. Loss-framed messages emphasize the disadvantages or costs of failing to comply with the recommendation [35]. Thus, in regard to smoke-free policies, loss-framed advertisements highlight the disadvantages or costs of exposure to SHS (e.g. increased risk of heart attack, asthma and lung cancer) [35, 36]. Gain-framed messages promoting smoke-free air emphasize the advantages or benefits of smoke-free laws (e.g. better quality of life). Prevention behaviors (e.g. avoiding SHS) are generally perceived as less risky as they are more likely to result in a positive outcome (e.g. reduced risk of illness). Therefore, according to the framing postulate, gain-framed messages are more effective for prevention interventions, whereas loss-framed messages are more effective for disease detection interventions (e.g. cancer screening) that are considered to be more risky [37]. However, consumer marketing research has found negative information to be more attention-grabbing and persuasive than positive information in general (e.g. [38, 39]). The phenomenon of negativity bias has been proposed as an explanation for the greater salience and distinctiveness of loss or negative framing [40]. Leshner and Cheng [41] found that loss-framed anti-tobacco messages were more effective than gain-framed ones in influencing people's attention and memory. In summary, the research on how framing impacts compliance with anti-tobacco messages is promising but sparse and somewhat contradictory. Furthermore, prior literature has predominantly focused on evaluating tobacco control messages in the context of smoking cessation and prevention (e.g. [42]). Little is known about messages promoting smoke-free policies.

To develop the evidence base around planning and implementation of successful smoke-free interventions in rural communities, this exploratory study aimed to identify information needs and key message features that affect receptivity to pro-health advertisements among residents of rural communities and increase support for smoke-free legislation. The study was a supplement to a larger 5-year randomized controlled trial (RCT) launched in 2007 to test the effects of a tailored, stage-based intervention on community readiness [43, 44] and policy outcomes (e.g. enactment of local laws) in rural Kentucky. The intervention, based in part on the ASSIST model [45], focused on developing and supporting policy advocacy skills to build capacity and demand and translate and disseminate science to promote smoke-free policy. Treatment community coalition advocates were provided with training and ongoing technical support in the use of evidence-based strategies to promote smoke-free laws. In addition to building capacity, they were advised and assisted with building demand for smoke-free laws and translating and disseminating science related to SHS and smoke-free policy. One of the key elements of the intervention was the use of low-cost media campaigns and branding to build demand for smoke-free policy. Coalitions received guidance

in developing low-cost direct-mail and other media campaigns. Sample message themes included SHS as a serious health hazard; the right to breathe clean air; benefits of smoke-free air laws and importance of comprehensive smoke-free workplace laws. Key informants and elected officials were assessed over time for community readiness for smoke-free policy change in all counties [8], and treatment communities received feedback on community readiness each year.

The research questions of the exploratory study reported here were: (i) What are the cultural themes relevant to smoke-free policy change in rural communities? (ii) Do anti-tobacco advertisements differ in effectiveness by content? (iii) What message characteristics, specifically framing and emotional tone, correspond to the most effective tobacco policy messages? and (iv) Are smoke-free messages perceived differently according to smoking status and SHS exposure? This is an exploratory, rather than a hypothesis-driven approach; therefore, the data have been analyzed to determine ideas for development of smoke-free advertisements, rather than for theory-building.

Methods

Design and sample

A cross-sectional, descriptive-correlational focus group design was employed with non-tobacco using adults residing in one of three treatment counties from the larger RCT study. For the larger RCT study, 40 counties (22 treatment counties and 18 control counties) were selected from the total population of 99 rural Kentucky counties through random sampling for inclusion in the study, with some counties omitted from consideration because they were in the same health department district as another county randomly chosen for the pool of eligible counties. Once selected for the study, counties were randomly assigned to treatment and control groups.

For this exploratory study, three counties were selected from the treatment group of the larger RCT. Study counties were selected based on the Year 2 'Knowledge' score, a dimension of overall community readiness for smoke-free policy reflecting 'the degree of public education on SHS and smoke-free policy' (see Table I). One community in each tertile was selected from high to low knowledge scores, and all three were approximately matched on population size and smoking prevalence. Among these counties, there was an inverse relationship between the level of knowledge and tobacco production. Two of the three counties had no smoke-free laws; in the remaining county, 29.3% of the population was covered by a comprehensive smoke-free law in the major city. These counties were chosen so that the combined sample of focus group participants would vary with regard to degree of public discourse about the issue. Five focus groups were held in a high-knowledge community ($n = 32$); four groups were conducted in a community with intermediate knowledge ($n = 37$) and two groups were held in a low-knowledge community ($n = 13$). The number of participants per group ranged from 3 to 15. Fewer residents were willing to participate in the low-knowledge community.

Message selection

Research team members with backgrounds in a variety of disciplines iteratively reviewed and discussed past and current smoke-free policy promotion messages used by rural communities in the larger study. As a result, 17 messages were selected (see Supplementary data). The messages differed in their informational content (e.g. negative health effects of SHS versus benefits of supporting smoke-free laws). The 17 messages were classified *post hoc* into the following categories: light-hearted messages using humor and cartoons (e.g. a cartoon with the message 'If you are in my space, don't blow smoke in my face'); messages with a serious emotional tone describing health risks, using anger appeals, faith appeals (e.g. image of a child with the message 'Please Don't Smoke Around Me! SIDS, asthma, bronchitis . . . Secondhand Smoke-An Unacceptable Risk') and three groups based on framing [loss-framed messages, e.g. '2 hours of exposure can speed up the heart rate and lead to abnormal heart

Table I. *Knowledge score and selected demographic characteristics for the three focus group counties*

County	Knowledge score from readiness assessment	Population size	Adult smoking rate	Pounds burley tobacco
A	0.75	16 322	31.0%	99 500
B[a]	0.49	22 559	27.3%	280 500
C	0.32	19 086	33.9%	4 072 200

[a]This county had a city with a comprehensive smoke-free ordinance covering 29.3% of the county population.

rhythms (which may cause death), gain-framed ones, e.g. 'Smoke-free saves lives' and mixed-framed messages].

Procedure

A convenience sample of focus group participants were recruited using word of mouth by the local health department staff and smoke-free coalition members. In addition, recruitment flyers containing a brief description of the study, qualifying criteria and research personnel contact information were distributed in local public venues. Those willing to participate were pre-screened and invited to attend the focus groups at a local facility (e.g. health department, school, community center, etc.). After the introduction and warm up, participants reviewed a series of 17 print advertisements and were asked to rate them in regard to effectiveness in prompting people to take action by getting involved in a smoke-free campaign, educating people about the seriousness of SHS exposure and persuading people to support smoke-free laws for workplaces. The print advertisements were selected from the promotional materials developed by local tobacco control coalitions, the CDC, Campaign for Tobacco-free Kids and used by Kentucky communities to promote smoke-free environments. The ads included direct mail postcards, newspaper ads, billboards, church bulletin inserts, dining guides and other materials (see Supplementary data). The order of message presentation was randomized to reduce response bias. Prior to reviewing and rating the advertisements, participants completed a survey assessing their demographic and personal characteristics. After rating the materials, the moderator presented the messages and elicited responses from the group. Probes were used to encourage a more in-depth focus group discussion. Each focus group session lasted ~30 min. Discussions were conducted by a trained moderator and an on-site observer who recorded field notes. The recordings were transcribed and analyzed to identify major themes connected to the advertisements. Lunch or dinner was served. The study was approved by the University of Kentucky Institutional Review Board.

Rating message content

To obtain independent assessments of ad emotional tone and framing, nine adults served as content judges. These participants were graduate students in communication, public health, and nursing faculty and staff with expertise in the content area. Judges reviewed the messages and indicated whether the message was framed in terms of gain, loss or both (ICC = 0.78) and serious, light-hearted or mixed tone (ICC = 0.68). Based on the judges' coding, the ads were subdivided into two groups based on the emotional tone of the message [light-hearted (3 messages), serious tone (14 messages)] and three groups based on framing [loss-framed (10 messages), gain-framed (3 messages) and mixed-framed (4 messages)] fell into this category.

Measures

Each focus group participant completed a demographic survey including a series of single items assessing sex, age, county of residence, smoking status (former versus never), whether they lived with a smoker (yes/no), and whether smoking had occurred in their home in the last 7 days (yes/no). The survey also measured knowledge, attitudes and self-efficacy related to advocacy.

'Knowledge' of the hazards of SHS was assessed using a three-item scale [16] with response options ranging from 1 = 'strongly disagree' to 4 = 'strongly agree'. The items were: 'Is it harmful to a person's health if they live in a house where a smoker smokes tobacco indoors', 'Smoking

cigarettes around a baby increases the chance it will die of sudden infant death syndrome' and 'Inhaling someone else's smoke can cause heart disease in nonsmokers'. The items are summed to form a total knowledge score, with higher scores indicating greater knowledge (range = 3–12). Reliability of 0.77 has been reported [16]. Cronbach's alpha for this study was 0.85.

'Attitudes' about prohibiting smoking in public were assessed using an adapted scale. In the original version, respondents are asked to rate on an ordinal scale ranging from 'strongly disagree' to 'strongly agree' how much they desire smoke-free policies in the following six areas: indoor areas of restaurants, buildings open to the public, bars and cocktail lounges, indoor sporting events and concerts, indoor workplaces and daycare centers. We adapted the scale by adding two categories: government buildings; and bingo halls, bowling alleys and billiard halls. The total attitudes score was the sum of the eight items, ranging from 8 to 32 with higher scores indicating a greater desire to prohibit smoking in public areas. The scale has an alpha of 0.87 for the original six-item version [16]. The eight-item version used in this study had a reliability of 0.94.

'Self-efficacy' was assessed using a six-item scale to measure how capable participants felt taking policy advocacy actions including: 'Gathering the necessary information', 'Writing letters to elected leaders', 'Meeting with elected officials at their offices', 'Writing letters to newspaper editors', 'Defending your opinions even when someone disagrees with you' and 'Keep persisting even if it is hard to see results'. Responses ranged from 0 ('I definitely cannot do it') to 10 ('I definitely can do it'). The items are summed to form a total self-efficacy score ranging from 0 to 60, with higher scores indicating greater self-efficacy to take policy advocacy actions. Reliability of 0.89 has been reported [46]. Cronbach's alpha in this study was 0.89.

The 'Focus Group Interview Guide' included assessment of existing educational materials including perceived effectiveness, perceptions of culturally appropriate ways to communicate information about the hazards and risks of SHS exposure and ideas for creating educational materials tailored to the information needs of the target audience.

Three indicators of 'Perceived Effectiveness of the Ads' were identified, and the research team developed measures to assess: (i) potential to prompt involvement in smoke-free efforts (action), (ii) impact on perceived seriousness of SHS exposure (hazard) and (iii) impact on views toward smoke-free workplace laws (support). Action was measured by a four-item scale including: (1) 'How likely is it that the ad will prompt you to contact the coalition to get involved in smoke-free efforts?' (2) 'How likely is it that the ad will prompt you to seek more information about secondhand smoke?' (3) 'How likely is it that the ad will prompt you to join the smoke-free coalition?' and (4) 'How likely is it that the ad will prompt the reader to contact elected officials about smoke-free policy?' Responses ranged from 1 ('not likely at all') to 4 ('very likely'), with potential scores ranging from 4 to 16. The items are summed, with higher values indicating greater likelihood for taking action to support smoke-free efforts. To make this score more comparable in scale to the subsequent single-item effectiveness indicators, the sum was divided by 4 and the mean was used as the mean was the measure for action. Hazard was assessed with a single item, 'In general, the ad portrays exposure to secondhand smoke as a serious health hazard;' response options ranged from 1 ('strongly disagree') to 4 ('strongly agree'), with higher scores indicating greater perceived hazard. Support was assessed with a single item: 'Do you think the ad will increase support (2), decrease support (0) or not change (1) views toward a smoke-free workplace law in your community?' The higher the score the more likely they thought it would garner support for smoke-free laws.

Data analysis

Qualitative focus group data were initially analyzed by a member of the research team using open coding to identify themes. An open-coding technique includes labeling concepts, and defining and developing categories based on their properties and dimensions, and it allows researchers to

comprehend qualitative data by anchoring and naming conceptual categories and functions [47]. The initial open-coding analysis yielded seven themes or categories of responses to the ads. The 11 focus group transcripts were then reread using a qualitative descriptive approach [48]. Fundamental qualitative description is more interpretive than quantitative description; this method is particularly useful for data that provide a straightforward answer to an investigator's questions, and to summarize evidence in everyday language. In addition, it allows for more descriptive validity compared to other qualitative methods, such as phenomenological description or grounded theory [48]. There was no attempt to apply a particular theory, framework or system to interpret the data, but rather the focus of the analysis was to identify message characteristics that resonate with rural communities based on participant responses to focus group questions, and to help coalitions design health-promoting messages.

Quantitative survey data were summarized using means and standard deviations or frequency distributions as appropriate. Comparisons among the 17 messages for each of the three effectiveness indicators (i.e. action, hazard and support) were made using separate repeated measures analysis of variance (ANOVA) models, with *post hoc* comparisons based on Fisher's least significant difference procedure. This multilevel modeling strategy, with message ratings nested within participant, was used to account for correlations among responses from the same individual. The first series of models included the fixed effect of message (with 17 levels, one for each ad) and the random effect of participant. Another series of repeated measures models included the fixed effect of either tone (two levels) or message frame (three levels). It was not possible to simultaneously consider tone and frame in the same model as these two factors were so closely related (e.g. there were no light-hearted/loss framed messages, making this combination inestimable). For these models, the other fixed effect was ad nested within tone (or frame, as appropriate), with the random effect of participant.

The final series of repeated measures models assessed whether ratings of the effectiveness indicators of action, hazard and support for smoke-free workplaces varied by respondent smoking characteristics. For each of these outcomes, the factors of message (17 levels) and smoking characteristic (2 levels) were included in the model. Additional model factors were the fixed effect of ad and the interaction between smoking characteristic and ad, and the random effect of participant. Separate models were considered for smoking status (former/never), any smokers living in the home (yes/no) and whether smoking occurred in the home in the last 7 days (yes/no). Data analysis was done using SAS for Windows; given the three outcomes considered and six types of models, an alpha level of 0.003 was used throughout as a protection from Type I errors.

Results

Sample characteristics

There were no significant differences in participant demographic characteristics, knowledge, attitudes or self-efficacy scores by county of residence. Therefore, participant data from the three counties were combined into a single sample for the analyses. The combined sample was comprised of residents who were predominantly female (94%) and aged 40–70 years (60%) living in one of three rural communities ($N = 82$; see Table II). Average age of participants was 59.1 years (SD = 15.5); 29% were former tobacco users while the remainder had never smoked. Most did not live with a smoker (82%), and nearly all reported that no smoking had occurred in the home in the past 7 days (89%).

The average score for knowledge of the hazards of SHS was relatively high, with a mean of 10.7 (SD = 1.7), ranging from 6 to 12. The mean attitudes about prohibiting smoking in public places scale were 29.4 (SD = 3.9), ranging from 17 to 32. The average self-advocacy score was relatively low, with a mean of 37.6 (SD = 15.3).

Cultural themes and possible pitfalls

In regard to the first research question related to the cultural themes relevant to smoke-free policy

Table II. *Demographic characteristics of focus group participants (N = 82)*

Demographic variable	Frequency (%)
Gender	
Female	77 (93.9)
Male	5 (6.1)
Age	
25–39 years	14 (17.5)
40–70 years	48 (60.0)
71–83 years	18 (22.5)
County of residence	
A	32 (39.0)
B	37 (45.1)
C	13 (15.9)
Smoking status	
Never smoker	58 (70.7)
Former smoker	24 (29.3)
Number of smokers living in the home	
None	65 (82.3)
One or more	14 (17.7)
Anyone smoking in home during last 7 days?	
Yes	9 (11.0)
No	73 (89.0)

change in rural communities, the following ideas regarding perceptions of SHS and smoke-free policies, barriers to effective promotion of smoke-free policies and potential unintended effects of smoke-free ads emerged from the focus group data.

Secondhand smoke as a community problem

SHS was recognized as a serious rural community problem. Several participants described negative experiences of working at or visiting public places that were not smoke-free such as bingo halls, restaurants, fairs and festivals. For example, one respondent said that the local bingo hall was 'so cloudy, you couldn't even see'. Several indicated they wanted more information on smoke-free venues in their communities, such as dining guides. It was also suggested that residents would support smoke-free businesses. However, some feared that due to high smoking prevalence in rural communities it would be difficult to pass smoke-free laws: 'So many people smoke in [our community]. It would be difficult to pass no smoking policy'. Tobacco growing culture and lack of education (e.g. 'So many don't read well') were identified as potential barriers. Some participants were willing to take action in support for smoke-free efforts in their community but expressed frustration with the local government: 'You can't call a magistrate or get anything done around here'. Many expressed the need for more specific information on how to get involved.

Health risks

All the group members were aware of health risks associated with exposure to SHS. Health risk messages reinforced beliefs that SHS is harmful. Participants commented that the ads 'stirred emotion' and would 'make people think'. However, some felt that messages only appealed to non-smokers and argued that the ads needed to appeal to smokers, as well as non-smokers.

Smoking sections

Messages describing ineffectiveness of smoking sections were understood and characterized as 'thought-provoking' but participants felt they were only relevant to restaurants and not all public spaces: 'Message implies restaurants and not all public buildings' and 'Won't work. It should really be in restaurants AND workplaces'.

Public opinion/perceived norms

Messages relaying public opinion poll data and appealing to perceived norms, e.g. 'If you think you have a right to breathe smoke-free air, you are not alone!' received strong support from the participants. For example, one commented that the message 'would encourage a person to speak out against smoking knowing the majority agrees'. Another one said: 'I would ask a local official about the stats if I received this'.

Religiosity

Participants suggested that the message featuring quotes from the scripture 'carries more weight because the church supports the cause'. Other statement examples were: 'In Eastern Kentucky this may work better for our county', 'Engaging,

informative', 'I love it, should be in every church', 'It will increase support by [the faith community] but this message needs to be outside of church bulletins also' and 'Reminding [the faith community] is always a good idea'.

Attacking smokers

Advertisements blaming the smoker, e.g. 'Smokers kill non-smokers' were described as 'too emotional' and 'offensive' by some participants. A number of participants had family members or friends who were smokers: 'My daddy was a smoker and he was not trying to kill anyone', 'We pushed [smokers] into the corners' and 'My father smoked until he was dead and he said he fought for the right to smoke'. Attacks on smokers may not be a useful strategy in rural communities, and it may be best to focus on the smoke rather than the smoker. One participant commented: 'Convince the smokers it['s] not about them and go from there. It's about cooperation and saving people's lives'.

Making messages 'personal'

Participants suggested that the ads needed to be more 'personal'. Some commented that in rural areas, it was important that the ads have 'a person's name to contact' and feature pictures of local people. Other examples of comments were, 'Show more that it is local' and 'Need pictures in rural areas'.

In general, participants preferred ads that were informative but 'short and to the point', and ads that described specific steps for taking action. Participants thought that cartoons, 'cute' and humorous advertisements, would not work for adult viewers in rural communities.

Comparisons of effectiveness of message content

There was a significant overall difference among the messages for each effectiveness indicator of action ($F_{16,\ 1199} = 14.8$, $P < 0.0001$), hazard ($F_{16,\ 1201} = 16.9$, $P < 0.0001$) and support for smoke-free workplaces ($F_{16,\ 1198} = 9.6$, $P < 0.0001$). Table III contains the means for each effectiveness indicator as assessed for each of the 17 messages. Each mean is ranked from low to high per indicator, illustrating the messages that ranked highest in perceived effectiveness. Most of the items with high rankings for action were also ranked highly for the other two effectiveness indicators. There was a tendency toward higher rankings for serious and loss-framed messages, compared to light-hearted and gain-framed messages. The three light-hearted messages (also the only gain-framed messages among the ads) were among the four lowest-ranked items for action and these three messages had the lowest average rankings when combined across all three indicators. The six messages identified as most effective had the highest rankings for action. As shown in the last column of Table III, there were large groups of ads that did not differ from each other in effectiveness ratings for action, but there were clear differences in perceived effectiveness between the ads with the lowest and highest scores, further emphasizing the differences between light-hearted/gain and serious/loss appeals. *Post hoc* comparisons of other effectiveness indicators (not shown) revealed similar groupings of ads, with separation between light-hearted/gain and serious/loss groups.

Effectiveness by message types and participant characteristics

Comparisons by emotional tone

Messages with a more serious tone had higher scores for each of the effectiveness indicators. The effect of tone was significant for each of action ($F_{1,\ 1199} = 77.6$, $P < 0.0001$), hazard ($F_{1,\ 1201} = 151.8$, $P < 0.0001$) and support for smoke-free workplaces ($F_{1,\ 1198} = 17.0$, $P < 0.0001$). Serious messages had higher scores for each of the three indicators (see Table IV).

Comparisons by framing

The comparison of message scores by framing category is also shown in Table IV. Since the only gain-framed messages were also light-hearted, it follows that gain-framed messages had low average scores for action, hazard and support for smoke-free workplaces; loss-framed messages had higher scores for

Table III. *Message content, average action, perceived hazard and support for smoke-free workplaces scores with rankings, averages and post hoc comparisons for action* (N = 82)

Message description	Mean score Action[a] (rank)	Mean score Hazard[a] (rank)	Mean score Support[a] (rank)	Average rank	*Post hoc* comparisons[b] For Action
Smoke-free for me—light/gain	2.11 (1)	2.70 (1)	1.35 (3)	1.67	a
Smoke in my face—serious/mixed	2.20 (2)	3.21 (4)	1.29 (1)	4.00	a b
Smokers kill non-smokers—serious/mixed	2.28 (3)	3.22 (5)	1.32 (2)	4.33	a b c
Clean air—light/gain	2.36 (4)	3.18 (3)	1.56 (6)	2.33	a b c d
A breath of fresh air—light/gain	2.41 (5)	3.16 (2)	1.56 (5)	3.33	b c d e
Toxic chemicals—serious/loss	2.49 (6)	3.57 (10)	1.65 (11)	8.33	b c d e f
Weapon—serious/loss	2.55 (7)	3.44 (8)	1.57 (7)	11.33	c d e f g
SHS kills—serious/loss	2.61 (8)	3.65 (13)	1.53 (4)	7.33	d e f g h
Smoking sections don't work—serious/loss	2.63 (9)	3.55 (9)	1.60 (8)	8.67	d e f g h i
Health and business facts—serious/mixed	2.73 (10)	3.39 (6)	1.64 (9)	9.00	f g h i j
SHS hurts you—serious/loss	2.74 (11)	3.64 (12)	1.67 (12)	12.33	f g h i j
[c]Are you exposed?—serious/loss	2.75 (12)	3.74 (17)	1.73 (14)	11.67	g h i j
[c]Public opinion—serious/loss	2.79 (13)	3.59 (11)	1.68 (13)	8.33	g h i j
[c]Not about smokers—serious/loss	2.86 (14)	3.67 (14)	1.74 (15)	14.33	h i j
[c]Don't smoke around me—serious/loss	2.87 (15)	3.72 (16)	1.79 (16)	16.00	i j
[c]Shift in smoky place—serious/loss	2.87 (16)	3.68 (15)	1.82 (17)	15.67	j
[c]Matthew quotes—serious/mixed	2.93 (17)	3.44 (7)	1.65 (10)	14.33	j

[a]Possible range of scores: 1–4 for action, 1–4 for hazard and 0–2 for support.
[b]Means with the same letter are not significantly different from each other at $\alpha = 0.003$.
[c]Message was chosen as most persuasive during focus groups.

these indicators. There was a significant difference among the framing categories for each of action ($F_{2,\ 1199} = 49.8$, $P < 0.0001$), hazard ($F_{2,\ 1201} = 106.5$, $P < 0.0001$) and support for smoke-free workplaces ($F_{2,\ 1198} = 32.6$, $P < 0.0001$). *Post hoc* analysis demonstrated that mixed-frame messages had higher means than gain-framed messages for action and hazard; the comparison of gain- and mixed-frame messages was not significant for support for smoke-free workplaces. The means for loss-framed messages exceeded those of both gain- and mixed-frame messages for each of the three indicators.

Message effectiveness and smoking characteristics

Message effectiveness ratings for action, hazard and support for smoke-free workplaces were compared between: (i) former and never smokers, (ii) those with no smokers living in the home versus living with one or more smokers and (iii) those who had smoking occur in the home in the last 7 days and those who did not. As with the comparisons described above for tone and frame, the repeated measures models were used for these comparisons; the main effects were smoking characteristic (2 levels), ad (17 levels) and their interaction. None of these smoking characteristic group comparisons was significant for any of the three indicators. In addition, for each model, the interaction between the binary smoking characteristic and ad was not significant, though the main effect of ad was significant in all three models.

Discussion

The increasingly sophisticated marketing by tobacco companies that targets rural residents presents a significant public health challenge and demands a timely response from public health agencies. Media campaigns consisting of messages promoting smoke-free environments are among such potential

Table IV. *Means and mean comparisons for action, perceived hazard and support for smoke-free workplaces by message tone and message framing* (N = 82)

	Action		Perceived hazard		Support for smoke-free workplaces	
Tone/framing categories	Mean	*Post hoc* comparisons[a]	Mean	*Post hoc* comparisons[a]	Mean	*Post hoc* comparisons[a]
Message tone[b]						
Light-hearted	2.29	a	3.01	a	1.49	a
Serious	2.66	b	3.54	b	1.62	b
Message framing						
Gain-framed	2.29	a	3.01	a	1.49	a
Mixed-framed	2.53	b	3.32	b	1.48	a
Loss-framed	2.72	c	3.62	c	1.68	b

[a]Means with the same letter are not significantly different from each other at $\alpha = 0.003$.
[b]The results reported under the *post hoc* comparisons heading for the message tone are actually a reflection of the significance of the *F*-test for the main effect of tone in the ANOVA; *post hoc* analysis not needed with only two categories of tone.

responses. In this study, we conducted focus groups and tested several smoke-free message concepts with rural non-smokers to better understand their information needs, attitudes and beliefs/perceptions about SHS and smoke-free policies and to assess reactions to anti-tobacco print advertising in these communities. The exploratory findings can be used to further develop and test smoke-free messages and inform future media campaigns aimed at promoting smoke-free policies in rural environments.

The results of the study provide some new information as well as confirm previous findings. Advertisements depicting the serious risks associated with exposure to SHS were perceived as more effective in prompting action, communicating the health hazards of SHS and promoting support for smoke-free policy than humorous, entertaining advertisements. These findings are consistent with recent literature on anti-tobacco and anti-smoking advertisements. Messages rated high in negative emotional tone are better received and associated with decreased intention to smoke [24, 30]. Furthermore, loss-framed messages require more processing resources and therefore are better remembered than gain-framed ones [41]. Former and never smokers did not differ in their views about the advertisements. Similarly, ratings of the ads did not vary by whether or not they lived with smokers or were exposed to SHS in the home. Thus, messages emphasizing health risks of exposure to SHS may work equally well for these groups. Loss framing and negative affect evoked by smoke-free advertisements may be effective because they increase perceptions of risk related to SHS and reduce perceived benefits of allowing smoking in public places [49].

Qualitative findings also showed that many rural focus group members were generally aware of the hazards of SHS. Even though smoking occurs at a significantly greater rate in rural areas than in urban communities [50], former and never smokers in rural areas recognized that SHS exposure represents a significant risk to health. Six ads that were chosen by the participants as the most effective featured information on the health consequences of exposure to SHS. However, some participants believed that the health hazard messages targeted non-smokers only and argued that the ads needed to appeal to smokers as well as non-smokers. Thus, it may be a useful technique to address potential health risks of SHS exposure to smokers, e.g. increased respiratory illness [51], in designing smoke-free messages for rural communities.

Overall, the study supported the importance of culturally significant factors, such as the central role of faith and interest in not blaming smokers in rural communities. Certain socioeconomic circumstances prevalent in various rural communities may necessitate special approaches to smoke-free policy messages. For instance, emphasis on religiosity

showed promise as a strategy. Faith-based messages received overwhelmingly positive feedback from the focus group members. These findings were consistent with a previous study on anti-tobacco messaging in a rural Kentucky community showing the effectiveness of faith appeals in prompting smokers to quit [52]. Norm-based messages featuring local public opinion data may be another culturally sensitive approach to promoting smoke-free environments in rural communities. Focus group participants commented that such messages may encourage rural residents to contact local officials and to express support for smoke-free environments.

Tobacco growing represents an economic mainstay in many rural communities [6]; high smoking prevalence also contributes to the acceptance of tobacco use. A strategy that may seem effective at first glance, but can backfire is blaming smokers. Attacks on smokers may be counterproductive in rural communities with high smoking prevalence and ties to tobacco growing. Thus, in designing smoke-free messages targeting rural residents, it may be best to shift the focus away from blaming the smoker. Another potential pitfall is addressing the ineffectiveness of smoking sections. Although tobacco companies and their allies promote smoking sections as a policy measure, smoke-free messages should be careful in the use of imagery associated with public venues in the ads. Focus group participants felt such ads were only relevant for restaurants and not all public spaces. Agencies developing advertising aimed at promotion of smoke-free environments should avoid these potential pitfalls.

This study has several limitations. First, given that study participants were female and not current smokers, results are not generalizable to males and smokers in rural communities. Second, perceived effectiveness of the message may not necessarily relate to its actual effectiveness in prompting action, increasing perceived risk and promoting support for tobacco control policies. However, determining perceived effectiveness is an important outcome to assess in order to design targeted messaging. Third, the small number of ads that were evaluated in this study. Further research is needed to determine whether light-hearted tone, humor and positive emotions could be used effectively to promote smoke-free policies in rural areas. The strong association between tone and framing in these ads (i.e. all light-hearted ads were gain-framed) did not allow for simultaneous testing of the relationship between tone and frame on the outcomes. The final limitation pertains to measures. Two of the indicator variables (hazard and support) were single-item measures that were ordinal rather than continuous. Future studies need to expand these measures to include multiple items providing for a greater range of scores.

Although the qualitative exploratory nature of the study is a limitation, this is overshadowed by the insights into rural residents' perceptions of smoke-free policies and the potential these insights present for future targeted interventions geared at prevention of SHS exposure. In summary, message frames, emotional tone and appeal types are critical factors that need to be considered when designing smoke-free messages. Because rural residents are exposed to the effects of sophisticated pro-tobacco advertising, communication research on smoke-free message effectiveness and information needs among rural populations is clearly important. There is a need to develop and test culturally tailored messages for rural communities about secondhand and smoke-free policies. This may be the first study to assess messages promoting smoke-free environments in rural communities with varying levels of readiness for policy support. No studies to date have directly examined the association between message framing, emotional tone of the smoke-free advertising and intention to take action in support of smoke-free policies in rural areas. Local smoke-free coalitions, health departments, hospitals, community health clinics and other community-based organizations would likely benefit from greater attention to the culturally sensitive, tailored content of health education materials. The findings presented in this study are a starting point for the development of community campaigns to promote policy change targeted at rural residents. Larger studies using a mixed-methods approach are needed to show whether the qualitative findings from the current study are applicable to other rural residents. In addition, further

research is needed to evaluate the effects of a full-scale media intervention on prompts to action, perceived health risk and support for smoke-free workplaces compared to standard educational materials.

Supplementary data

Supplementary data are available at *HEALED* online.

Funding

National Heart, Lung, and Blood Institute (3R01HL086450-03S2). The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Heart, Lung and Blood Institute or the National Institutes of Health.

Conflict of interest statement

None declared.

References

1. ALA. *Cutting Tobacco Rural Roots: Tobacco Use in Rural Communities. Disparities in Lung Health*. New York, NY: American Lung Association, 2012.
2. USDHHS. *How Tobacco Smoke Causes Disease: The Biology and Behavioral Basis for Smoking-attributable Disease: A Report of the Surgeon General*. Washington, DC: U.S. Dept. of Health and Human Services, Public Health Service, 2010. xv, 704 p.
3. IOM (ed). *Secondhand Smoke Exposure and Cardiovascular Effects: Making Sense of the Evidence*. Overview of key studies of the effects of smoking bans on acute coronary events, Washington, DC: National Academies Press, 2009, 125–162.
4. Hamilton WL, Biener L, Brennan RT. Do local tobacco regulations influence perceived smoking norms? Evidence from adult and youth surveys in Massachusetts. *Health Educ Res* 2008; **23**: 709–22.
5. Alamar B, Glantz SA. Effect of increased social unacceptability of cigarette smoking on reduction in cigarette consumption. *Am J Public Health* 2006; **96**: 1359–63.
6. Chaloupka F, Hahn E, Emery S. Policy levers for the control of tobacco consumption. *KY Law J* 2002; **90**: 1009–42.
7. Campaign for Tobacco-Free Kids. *The Toll of Tobacco in Kentucky*. 2013. Available at: http://www.tobaccofreekids.org/facts_issues/toll_us/kentucky. Accessed: 3 August 2013.
8. Satterlund TD, Cassady D, Treiber J *et al*. Barriers to adopting and implementing local-level tobacco control policies. *J Community Health* 2011; **36**: 616–23.
9. Cruz TB, Schuster D, Andreeva-Cook V. In: California Department of Public Health, California Tobacco Control Program (eds). *The Evolution of Tobacco Industry-sponsored Adult-only Facilities in California: A Case Study AOFs at public events*. Alhambra: University of Southern California, 2009, 16–20.
10. Otanez MG, Glantz SA. Trafficking in tobacco farm culture: tobacco companies use of video imagery to undermine health policy. *Vis Anthropol Rev* 2009; **25**: 1–24.
11. USDHHS. *Preventing Tobacco Use among Youth and Young Adults: A Report of the Surgeon General*. Washington, D.C.: U.S. Dept. of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, 2012. xiv, 899 p.
12. Crawford MA, Balch GI, Mermelstein R *et al*. Responses to tobacco control policies among youth. *Tob Control* 2002; **11**: 14–9.
13. FTC. *Federal Trade Commission Cigarette Report for 2007 and 2008*. Washington, DC: U.S. Federal Trade Commission, 2011.
14. Kosir M, Gutierrez K. *Lessons Learned Globally from Secondhand Smoke Mass Media Campaigns: Global Dialogue for Effective Stop Smoking Campaigns*. MN: Global Dialogue for Effective Stop Smoking Campaigns, 2009.
15. Dillard JP, Shen LJ, Vail RG. Does perceived message effectiveness cause persuasion or vice versa? 17 consistent answers. *Hum Commun Res* 2007; **33**: 467–88.
16. Quick BL, Bates B, Romina S. Examining antecedents of clean indoor air policy support: implications for campaigns promoting clean indoor air. *Health Commun* 2009; **24**: 50–9.
17. Siahpush M, Wakefield M, Spittal M *et al*. Antismoking television advertising and socioeconomic variations in calls to Quitline. *J Epidemiol Community Health* 2007; **61**: 298–301.
18. Worden JK, Flynn BS, Secker-Walker RH. Antismoking advertising campaigns for youth. *JAMA* 1998; **280**: 323.
19. Witter L, Chen L. *The She Spot: Why Women Are the Market for Changing the World and How to Reach Them*. San Francisco, CA: Berrett-Koehler Publishers Inc., 2008.
20. Puntenney D, Grumm C, Katz-Kishawi E. Women's biggest contribution: a view of social change. In: Clift E (ed). *Women, Philanthropy, and Social Change: Visions for A Just Society*. Lebanon, NH: University Press of New England, 2005, 139–157.
21. Park E, Scherer CW, Glynn CJ. Community involvement and risk perception at personal and societal levels. *Health Risk Soc* 2001; **3**: 281–92.
22. Rayens MK, Hahn EJ, Langley RE *et al*. Public support for smoke-free laws in rural communities. *Am J Prev Med* 2008; **34**: 519–22.
23. Rice RE, Atkin CK. *Public Communication Campaigns*. Thousand Oaks, CA: Sage Publications, 2001.
24. Biener L, Harris JE, Hamilton W. Impact of the Massachusetts tobacco control programme: population based trend analysis. *Br Med J* 2000; **321**: 351–4.

25. Freimuth VS, Hammond SL, Edgar T *et al*. Reaching those at risk—a content-analytic study of aids PSAs. *Commun Res* 1990; **17**: 775–91.
26. Goldman LK, Glantz SA. Evaluation of antismoking advertising campaigns. *JAMA* 1998; **279**: 772–7.
27. Beaudoin CE. Exploring antismoking ads: appeals, themes, and consequences. *J Health Commun* 2002; **7**: 123–37.
28. Pechmann C, Reibling ET. Antismoking advertisements for youths: an independent evaluation of health, counter-industry, and industry approaches. *Am J Public Health* 2006; **96**: 906–13.
29. Goldman LK, Glantz SA. Evaluation of antismoking advertising campaigns. *JAMA* 1998; **279**: 772–7.
30. Biener L, Ji M, Gilpin EA *et al*. The impact of emotional tone, message, and broadcast parameters in youth anti-smoking advertisements. *J Health Commun* 2004; **9**: 259–74.
31. Terry-McElrath Y, Wakefield M, Ruel E *et al*. The effect of antismoking advertisement executional characteristics on youth comprehension, appraisal, recall, and engagement. *J Health Commun* 2005; **10**: 127–43.
32. Tversky A, Kahneman D. The framing of decisions and the psychology of choice. *Science* 1981; **211**: 453–8.
33. Otsuka R, Watanabe H, Hirata K *et al*. Acute effects of passive smoking on the coronary circulation in healthy young adults. *JAMA* 2001; **286**: 436–41.
34. Kahneman D, Tversky A. Prospect theory: an analysis of decision under risk. *Econometrica* 1979; **47**: 263–91.
35. Meyerowitz BE, Chaiken S. The effect of message framing on breast self-examination attitudes, intentions, and behavior. *J Pers Soc Psychol* 1987; **52**: 500–10.
36. Stephenson MT, Witte K. Fear, threat, and perceptions of efficacy from frightening skin cancer messages. *Public Health Rev* 1998; **26**: 147–74.
37. Rothman AJ, Bartels RD, Wlaschin J *et al*. The strategic use of gain- and loss-framed messages to promote healthy behavior: how theory can inform practice. *J Commun* 2006; **56**: S202–20.
38. Ganzach Y, Karsahi N. Message framing and buying behavior—a field experiment. *J Bus Res* 1995; **32**: 11–7.
39. Kanouse DE. Explaining negativity biases in evaluation and choice behavior—theory and research. *Adv Consum Res* 1984; **11**: 703–8.
40. Rozin P, Royzman EB. Negativity bias, negativity dominance, and contagion. *Pers Soc Psychol Rev* 2001; **5**: 296–320.
41. Leshner G, Cheng IH. The effects of frame, appeal, and outcome extremity of antismoking messages on cognitive processing. *Health Commun* 2009; **24**: 219–27.
42. Biener L, Wakefield M, Shiner CM *et al*. How broadcast volume and emotional content affect youth recall of antitobacco advertising. *Am J Prev Med* 2008; **35**: 14–9.
43. Hahn EJ, Rayens MK, York N. Readiness for smoke-free policy and overall strength of tobacco control in rural tobacco-growing communities. *Health Promot Pract* 2013; **14**: 238–46.
44. York NL, Hahn EJ, Rayens MK *et al*. Community readiness for local smoke-free policy change. *Am J Health Promot* 2008; **23**: 112–20.
45. Stillman FA, Hartman AM, Graubard BI *et al*. Evaluation of the American Stop Smoking Intervention Study (ASSIST): a report of outcomes. *J Natl Cancer Inst* 2003; **95**: 1681–91.
46. Ramirez AG, Velez LF, Chalela P *et al*. Tobacco control policy advocacy attitudes and self-efficacy among ethnically diverse high school students. *Health Educ Behav* 2006; **33**: 502–14.
47. Lindlof TR, Taylor BC. *Qualitative Communication Research Methods*. Thousand Oaks, CA: Sage, 2002.
48. Sandelowski M. Whatever happened to qualitative description? *Res Nurs Health* 2000; **23**: 334–40.
49. Slovic P. The risk game. *J Hazard Mater* 2001; **86**: 17–24.
50. Eberhardt MS, Ingram DD, Makuc DM. *Urban and Rural Health Chartbook. Health, United States*. Hyattsville, MD: National Center for Health Statistics, 2001.
51. Lam TH, Ho LM, Hedley AJ *et al*. Secondhand smoke and respiratory ill health in current smokers. *Tob Control* 2005; **14**: 307–14.
52. Butler KM, Hedgecock S, Record RA *et al*. An evidence-based cessation strategy using rural smokers' experiences with tobacco. *Nurs Clin North Am* 2012; **47**: 31–43.