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Reach, Receptivity, And Beliefs Associated With the *Fresh Empire* Campaign to Prevent and Reduce Cigarette Use Among Youth in the United States

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Abstract

Purpose: To determine the association between exposure to FDA's *Fresh Empire* tobacco public education campaign and tobacco-related beliefs.

Design: Repeated cross-sectional data collection design with embedded longitudinal cohort over six data collection waves.

Setting: 30 US evaluation markets.

Sample: Hip Hop peer crowd-identified US youth aged 12–18 (N = 5,378).

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Author Contributions

MF, JG, AH, LH, JD, and TA contributed to the evaluation design. AH, JG, LF, and MS contributed to the acquisition of data. JG, GH, LC, AM, AH, MF, MS, and LF contributed to the analyses. JG, LC, GH, AH, AM, and MS contributed to the drafting of the manuscript. All authors contributed to the interpretation of data, revision of the manuscript, provided final manuscript approval, and agreed to be accountable for all aspects of the work.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethical Approval

This study was approved by RTI International's Institution Review Board, IRB Approval ID #13806. All participants provided informed consent or provided assent after receiving required parental permission.

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Publisher's Disclaimer: The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Food and Drug Administration.

Supplemental Material

Supplemental material for this article is available online.

Measures: Self-reported brand and video ad awareness (saw any ad at least sometimes) and perceived effectiveness (1–5 scale) to describe campaign awareness and receptivity. Exogenous exposure was measured using population-adjusted broadcast and digital video impressions. Tobacco-related beliefs included beliefs about smoking risks, attitudes towards tobacco-free people and lifestyles, and normative beliefs about smoking.

Analysis: Descriptive analyses of awareness, receptivity, and agreement with tobacco-related beliefs. Logistic regression models to determine the relationship between broadcast and digital video impressions and beliefs.

Intervention: *Fresh Empire* campaign.

Results: The campaign generated a high level of reach (71% brand and 66% video ad awareness at final wave) and messages were well-received (across waves 3.5–4.1 mean perceived effectiveness scores). Higher broadcast television exposure was associated with increased agreement with five beliefs related to addiction/control, being a bad influence on family/friends, and cosmetic effects of smoking (breath and attractiveness) (ORs = 1.16–1.27, (P s < .05)).

Conclusion: *Fresh Empire* successfully reached and resonated with Hip Hop-identified youth. The campaign was associated with a limited number of targeted beliefs.

Keywords

tobacco control; mass media campaign; adolescent

Purpose

In 2015, the U.S. Food and Drug Administration (FDA) launched *Fresh Empire*, a public education campaign that sought to prevent and reduce tobacco use among youth aged 12 to 17 who identify as Black, non-Hispanic; Hispanic; Asian/Pacific Islander; or multiracial, and identify with the Hip Hop peer crowd.^{1,2} The campaign associated living tobacco-free with being successful, attractive, and in control of one's life and future, and delivered messages using well-known Hip Hop influencers and artists on various media channels, including broadcast television, digital and social media, and local outreach.³ The strategy aimed to counter Hip Hop imagery that portrays tobacco use as a normative part of the culture.^{4–6} The campaign tagline was “Keep it Fresh: Live Tobacco Free,” and was active for nearly four years.⁷

FDA worked with Rescue Agency, a social branding agency specializing in behavior change marketing, to develop the campaign. *Fresh Empire* employed a promising approach rooted in the “social branding” framework,^{2,8,9} a marketing strategy that relies on peer crowd identity to segment audiences and associate healthy behaviors with desirable lifestyles.² Several behavioral theories are posited to underlie peer crowd campaigns, including social cognitive theory and the prototype willingness model.^{2,10,11} Each *Fresh Empire* ad had an average of two to five messages (e.g., smoking hinders goals; smoking harms the family). Messages were designed to gain audience trust and ensure relevance and prioritized changing perceived tobacco use norms; messages on health consequences were secondary.

Fresh Empire is the first large-scale peer crowd-targeted tobacco public education campaign. Peer crowd identification allows practitioners to design interventions that resonate with high-risk groups' identities and values based on characterization of high-risk subgroups of youth and young adults.² For example, youth and young adults who identify with the Hip Hop peer crowd are more likely to smoke and less likely to have anti-tobacco attitudes than those identifying with other peer crowds.^{12,13} Identification with certain peer crowds crosses geography and is "grounded more on one's cognitive identification with a shared culture than on one's immediate group of friends."² Experimental and localized studies demonstrate that peer crowd-targeted messages show promise for decreasing smoking susceptibility and behavior and increasing anti-smoking attitudes among peer crowd members;^{8,9,14–16} however, the *Fresh Empire* evaluation is the first large-scale media campaign evaluation of this approach.

Research suggests that campaign awareness and receptivity are preliminary markers of an effective campaign.^{17–22} Our evaluation has demonstrated that *Fresh Empire* campaign awareness was high among a sample of youth who identify with the Hip Hop peer crowd, and Hip Hop-identified youth also responded positively to *Fresh Empire*'s campaign ads and brand.¹ *Fresh Empire* perceived effectiveness scores (measure of receptivity to an ad) were similar to ads from FDA's *The Real Cost*,¹ a youth general market public education campaign that successfully prevented youth uptake of smoking.^{20,23,24}

While campaign awareness and receptivity are preliminary markers of an effective campaign, these factors may not be sufficient for effectiveness. Campaign creators ultimately designed *Fresh Empire* to change tobacco-related perceived social norms, attitudes, and beliefs.³ The objective of this study is to 1) examine the relationship between campaign exposure and beliefs using a sample of Hip Hop-identified youth, and 2) describe campaign awareness and receptivity for the duration of the campaign.

Methods

Design

The evaluation markets for the campaign were 30 designated market areas (DMAs) selected from the top 60 most populous US DMAs using a stratified regional random selection process to ensure broad variation in campaign exposure (see Guillory et al., 2020¹ for additional details on market selection). The 30 DMAs were a subset of the 36 DMAs where campaign activities occurred. The evaluation strategy used variation in potential exposure to paid media delivered in 30 DMAs.

Sample

We collected data from youth aged 12 to 18 who lived in one of 30 evaluation DMAs and identified with the Hip Hop peer crowd (defined as scores of 4–12 on Rescue's I-Base Survey measure;²⁵ additional detail below). To ensure an adequate sample of this hard-to-reach population, data collection consisted of a repeated cross-sectional survey with an embedded longitudinal cohort (we invited participants from previous surveys to complete subsequent surveys) and included an initial survey (wave 1) (July–November 2015) and

five subsequent surveys conducted approximately 6 months apart (wave 2: April–June 2016, wave 3: January–June 2017, wave 4: September 2017–January 2018, wave 5: July–November 2018, wave 6: April–July 2019) (see Guillory et al., 2020¹ for additional details).

We recruited participants using two approaches 1) screeners mailed to households likely to have eligible youth identified via an address-based sampling frame, and 2) targeted ads placed on social media (e.g., Instagram and Facebook). Mail-based recruitment occurred at waves 1 and 5. Field interviewers visited homes of eligible participants identified via mail-based screeners, obtained verbal parental permission and youth assent, and participants completed surveys on a laptop. At waves 2 and 5, field interviewers screened siblings in households for eligibility. Eligible siblings completed surveys in person. We recruited new participants at all waves using targeted social media ads. Individuals who clicked on ads completed the eligibility screener. Field interviewers contacted parents of eligible youth from social media via phone to obtain parental permission. Youth then provided written assent electronically and proceeded to complete the full survey online. At wave 2 only, any participant who completed a survey online was invited to share the screener link with friends (snowball sampling).

At each of the survey waves, we invited eligible participants who completed surveys at any previous wave to complete surveys online (written assent/consent) or in person (verbal assent/consent). Field interviewers obtained parental permission (when required) via phone or in person. All participants received \$25 for completed surveys regardless of recruitment mode. At waves 4, 5, and 6, participants who originally completed the survey in person received a \$5 bonus for completing surveys online (rather than in person) within the first two weeks of data collection. RTI International's Institutional Review Board approved this study (IRB Approval ID #13806). Data collection resulted in a sample of 5,378 unique participants and 12,861 completed surveys. Table 1 provides an overview of observations by recruitment source and survey wave (see Guillory et al., 2020¹ for additional details).

Measures

Campaign Awareness, Receptivity, and Brand Equity.—Prior to exposing participants to ads, we measured brand awareness by displaying the campaign logo and asking participants whether they had seen or heard of *Fresh Empire* in recent months. We defined brand awareness as aware vs. else. Those who had seen or heard of the brand rated 12 brand equity items on a 5-point Likert scale (1 = strongly disagree and 5 = strongly agree) (see Supplemental Material Appendix Table B-1 for items). Brand equity measures associations that an audience makes with a brand.²⁶ The items comprise two constructs: brand personality and loyalty (Cronbach's $\alpha = 0.90$), and perceived brand popularity (Cronbach's $\alpha = .87$).²⁷ To assess video ad awareness, participants viewed 30-second *Fresh Empire* ads and rated how frequently they had seen the video (“never,” “rarely,” “sometimes,” “often,” and “very often”). For analyses, we dichotomized the measure as sometimes or greater awareness of any ad shown at each survey. A 6-item scale (e.g., “This video is powerful” and “This video is informative”) assessed perceived effectiveness (PE) for each ad, similar to previous research.^{18,20} PE was assessed on a 5-point Likert scale (1 =

strongly disagree and 5 = strongly agree). For each video we combined items as scales with high reliability (see Supplemental Material Appendix Table B-2 for Cronbach's α).

Independent Variables: Potential Exposure to Broadcast and Digital Video Impressions.—We measured potential exposure to *Fresh Empire* paid media with data provided by the campaign media buying vendor at the DMA level for the 30 evaluation DMAs. In our analyses, we used population-adjusted impressions¹ for broadcast television and digital video, referred to as broadcast impressions and digital video impressions and defined as the number of impressions generated by each form of media among the target population adjusted for the size of the target population in each DMA.

We calculated impression measures for each participant based on DMA of residence and survey completion date. We aggregated impressions from campaign launch through the date a participant took each survey. These cumulative impressions represent each participant's cumulative potential campaign exposure prior to taking each survey. Because the impact of media campaigns may lessen over time, we discounted impressions by 25% quarterly (discount level determined by assessing AIC/BIC scores at varying discount levels (10%, 25%, and 50%)) to give impressions at the campaign start less weight and account for recency bias when evaluating outcomes in later waves. We treated impression measures as continuous variables in models.

Control Variables: Demographics and Other Covariates.—We measured various demographics, including age at first survey, gender, and race/ethnicity (see Supplemental Material Appendix A for variable definition). Tobacco-related covariates included household cigarette smoking (yes/no), smoking susceptibility and status (see Supplemental Material Appendix A for definition), number of four closest friends who smoke cigarettes (none/any), and household smoking rules (yes/no). We measured Hip Hop score using the I-Base photo selection exercise (see Jordan²⁵ for additional detail and example images) with scores from 4 to 12 indicating Hip Hop identification (12 = highest score). We also measured parent media use rules (lots of rules vs. else), frequency parents enforce rules (most of the time vs. some of the time/a little of the time/never), frequency parents allow youth to watch R-rated movies (never, once in a while, sometimes, and all the time), current school performance (much better than average, better than average, average, below average, and much worse than average), number of close friends (0 to 7), religious services attendance (attend religious services never, less than once a month, about once a month, about 2 or 3 times a month, once a week, and more than once a week), social media use (low vs. high, see Supplemental Material Appendix A for definition), and original recruitment source (in-person and online) as covariates. School environment was a 3-item scale (Cronbach's $\alpha = .84$) (e.g., "I feel close to people at my school" and "I am happy to be at my school"). Sensation seeking was a 4-item scale (Cronbach's $\alpha = .82$) (e.g., "I would like to explore strange places").²⁸ Response options for both scales ranged from "strongly disagree" to "strongly agree" on a 5-point Likert scale.

¹Target rating points, defined as the percentage of the target population potentially exposed to ads (reach) and the average number of times ads may have been seen (frequency), are typically used as a paid media delivery metric. However, we could not obtain data on campaign reach to generate target rating points.

We asked youth about awareness of two existing youth tobacco public education campaigns (truth© and “*The Real Cost*”) and a fake campaign (Digital Youth Against Tobacco (DYAT)) to control for misattributed awareness, with these variables dichotomized as aware vs. not aware.

All models included DMA-level fixed effects as covariates to control for potential unmeasured differences between DMAs that may impact both media delivery and tobacco-related beliefs. Continuous time was also included as the time specification in models to control for other influences on beliefs unrelated to the campaign.

Outcome Variables: Tobacco-Related Beliefs.—We assessed a total of 26 tobacco-related beliefs focused on perceived smoking risks, attitudes toward people who are tobacco-free, normative beliefs about smoking and perceived prevalence and popularity of smoking (see Table 3), rated on a 5-point Likert scale (1 = strongly disagree and 5 = strongly agree), unless otherwise specified. In line with the goal of the campaign to increase agreement with tobacco-related beliefs, all items were dichotomized as strongly agree or agree vs. else for analysis.

We assessed beliefs related to risks of smoking (e.g., addiction and negative influence on family/friends; 6 items), people who are tobacco-free (6 items), attitudes about living tobacco-free (3 items), and norms about smoking, including approval of smoking (4 items), perceived family, friend, and peer disapproval (4 items), popularity (two items), and peer smoking (one item). Normative belief items included perceived family, friend, and peer disapproval of smoking items asking whether participants agreed that it is “very important for me to not smoke cigarettes” according to others at 4 levels of social distance (e.g., family). Novel survey items assessed willingness to associate with others who smoke in four social circumstances (assessed on a 4-point scale and dichotomized as definitely not and probably not vs. probably yes and definitely yes). Two original items assessed perceived popularity of smoking.

The perceived peer smoking item asked participants to report how many “people who hang out where you hang out” smoke cigarettes (assessed on a 5-point scale, dichotomized as none vs. a few, some, most, and all).

Intervention

Fresh Empire launched in four cities in the Southeastern US in May 2015 and then expanded to 36 DMAs in the US in October 2015¹. Campaign media was delivered via digital and social media, broadcast television, print, out of home, radio, and events, with the media mix focused heavily on digital and social media (approximately 40%) given these channels’ popularity with youth. Additionally, social media creative was rotated often to match the pace that content is consumed on these channels and to avoid any potential fatigue toward the campaign’s messaging.

Analysis

We used descriptive statistics to summarize sample characteristics and self-reported awareness of the *Fresh Empire* brand at each wave, and awareness of any video ad, PE

scale scores for individual video ads, and brand equity at waves 2–5. We used descriptive statistics to summarize agreement with tobacco-related beliefs and t-tests to assess change in the agreement level with beliefs and brand equity items and scales between wave 1 (wave 2 for brand equity) and subsequent waves. In Supplemental Material Appendix Table B-3, we provide descriptive statistics (mean and range) to summarize broadcast and digital video impression delivery by wave.

To assess the relationship between exogenous broadcast and digital video impressions and tobacco-related beliefs among the full study sample ($N = 12,861$ observations), we conducted separate random-effect logit models for panel data using clustered standard errors to account for intragroup correlation across individuals and the presence of multiple observations. These models estimated the odds of agreement with each belief as a function of cumulative broadcast impressions and cumulative digital video impressions as simultaneous measures in the same model. We ran models for belief items that changed between wave 1 and wave 6 ($P < .10$) to investigate whether there is a relationship between campaign exposure and agreement with beliefs. We controlled for measures described in demographics and other covariates above. We scaled broadcast and digital video impressions by 1,000 in models to aid interpretability of odds ratios. Models included all participants who had completed at least one survey.

To interpret significant model effects, we used the Stata margins command to estimate the effect of specified ranges and intervals of impression delivery on predicted probabilities of agreeing/strongly agreeing with beliefs. We conducted analyses with unweighted panel data using Stata 15.1.

Results

Sample Characteristics

See Table 2 for sample characteristics for the full set of observations. The wave 1 through wave 6 samples ranged from 2,043 to 2,397 observations. Participant retention was high, with 56–85% of surveys completed at waves 2 through 6 completed by individuals who participated in a previous wave. The majority of the sample was 15 or older at both wave 1 (65%) and wave 6 (92%) and the majority of the sample was female across waves (60–63%). Black, non-Hispanic youth made up the largest proportion of the sample at each wave, followed by Hispanic youth.

The largest proportion of the sample at each wave identified as unsusceptible never smokers, followed by experimenters, then never smokers susceptible to smoking. Current or former smokers made up the smallest proportion of the sample at each wave. Shifting patterns of smoking over time were expected, given the embedded longitudinal cohort, as youth susceptibility to and experimentation with cigarettes increases with age.²⁹

Fresh Empire Campaign Awareness, Receptivity, and Brand Equity

Fresh Empire brand awareness was low around campaign launch at wave 1 (6%), with awareness increasing to 33% at wave 2, 67% at waves 3 and 4, 70% at wave 5, and reaching its peak at 71% at wave 6. *Fresh Empire* video ad awareness at waves 2 and 3 was similar

(63% and 64%, respectively). Video ad awareness decreased at wave 4 to 53% and increased to 66% at waves 5 and 6 (data not shown).

Supplemental Material Appendix Table B-2 provides *Fresh Empire* individual video ad PE scores from waves 2 to 6 (not assessed at wave 1). Overall, participants reacted positively to *Fresh Empire* ads with PE scores ranging from 3.53 to 4.11 out of 5 (4 = agree) across survey waves. PE scores decreased slightly as the campaign progressed, which may speak to the novelty of campaign and creative content at the campaign start, greater receptivity to early ads, or survey fatigue among returning participants.

Supplemental Material Appendix Table B-1 shows agreement with individual items used to assess brand equity at each wave (scale means reported in text). Brand personality and loyalty started strong (4 = agree) and decreased over time (wave 2: M = 4.01, SE = 0.03; wave 3: M = 3.98, SE = 0.02; wave 4: M = 3.92, SE = 0.02; wave 5: M = 3.98, SE = 0.02; and wave 6: M = 3.86, SE = 0.02), and was significantly lower at waves 4 ($P < .001$) and 6 ($P < .001$) compared with wave 2. Endorsement of positive personality traits ascribed to *Fresh Empire* was higher for “trendy” and “fresh” at wave 5 compared with wave 2 ($P < .05$).

Perceived popularity of the brand also decreased over the course of the campaign (wave 2: M = 3.13, SE = 0.03; wave 3: M = 3.10, SE = 0.03; wave 4: M = 3.04, SE = 0.03; wave 5: M = 3.07, SE = 0.03; and wave 6: M = 2.95, SE = 0.03), with significantly lower mean scores at waves 4 ($P < .05$) and 6 ($P < .001$) compared with wave 2. However, a single item assessing reported “buzz” about the campaign increased through wave 5, with significantly higher agreement at wave 5 than wave 2 ($P < .01$).

Changes in Agreement with Beliefs

Table 3 shows descriptive results for agreement with tobacco-related beliefs by survey wave. Seventeen beliefs showed significant change between wave 1 and wave 6. A number of items had high levels of wave 1 agreement, including attitudes toward living tobacco free (83–88%), perceived family, friend and peer disapproval of smoking (62–89%), and several beliefs about risks of smoking (e.g., “if I smoke I will damage my body”—91% and “if I smoke I will shorten my life”—86%), suggesting a ceiling effect and limited belief “room to move.” Several beliefs with strong agreement at wave 1 (>70%) exhibited significant decay between wave 1 and wave 6 (e.g., “I am proud to live tobacco-free”).

Relationship between Fresh Empire Exposure and Beliefs

Table 4 shows results from regression models assessing the association between exogenous campaign exposure and beliefs (see Supplemental Material Appendix Table B-3 for descriptive data on broadcast and digital video impression delivery and Supplemental Material Appendix Table B-4A-D for full model results). Higher exposure to broadcast impressions was associated with a higher level of agreement with 5 of the 17 belief items that changed from wave 1 to wave 6. We found a positive relationship between youth exposure to broadcast impressions and agreement that people who are tobacco-free are 1) in control ($P < 0.01$), and 2) attractive ($P < 0.01$). The left panel of Figure 1 displays the predicted probability of agreeing or strongly agreeing with these items at varying levels

of broadcast impressions. Compared with observed levels of agreement, agreement with “people who are tobacco free are in control” would have been 2 percentage points lower at 0 impressions, or in the absence of the campaign across the study period (61.4% compared with 59.7%). For “people who are tobacco-free are attractive,” agreement would have been 2 percentage points lower with no campaign (56.6% observed compared with 54.9% at 0 impressions). At 2000 impressions, a level of advertising 4 times higher than observed across the campaign, agreement with would have been 6 percentage points higher for both beliefs compared with no campaign.

We found that potential exposure to a larger number of broadcast impressions was associated with an increase in agreement with three beliefs about risks of smoking focused on addiction, bad breath, and being a bad influence on family/friends ($ps < 0.05$). As shown on the right in Figure 1, actual effects for all three beliefs was a 1 percentage point increase compared with no exposure (addiction: 69.0% observed vs. 67.8% at 0 impressions, bad breath: 88.5% observed vs. 87.5% at 0 impressions, and be a bad influence: 85.5% observed vs. 84.3% at 0 impressions). At 2000 cumulative broadcast impressions, agreement with these items would have been between 4 and 5 percentage points higher compared with no campaign. Digital video impressions did not predict significant change across the belief items assessed.

Discussion

Given the pattern of findings observed, we see limited evidence that *Fresh Empire* was associated with tobacco-related beliefs. At the conclusion of the evaluation, we found that exogenous exposure to *Fresh Empire*, measured by broadcast television impressions, had a relationship with 5 of the 26 belief items assessed, though the magnitude was small. These beliefs focused on tobacco-free people being “attractive” and “in control,” along with beliefs about risks related to addiction, being a bad influence on family and friends, and cosmetic effects of smoking. The magnitude of the relationship between the campaign and beliefs was small—exposure to the campaign was associated with, on average, between a 1 and 2 percentage point increase in agreement with each belief compared with no exposure. Even at the highest exposure levels, we found that the campaign was associated with between a 4 and 6 percentage point increase in agreement compared with no exposure. We found no significant relationship between beliefs and exposure measured by digital video impressions.

Among its successes the campaign counts creative content that elicited high levels of awareness and positive reactions among the campaign audience; ad receptivity and brand equity were on par with or greater than previous successful youth tobacco public education campaigns (FDA’s *The Real Cost*[®], truth©’s Finishit©).^{20,24,26,30,31} *Fresh Empire* represents the first large-scale application of a peer crowd strategy to prevent youth tobacco use; that it achieved high levels of awareness and receptivity suggests that a federal tobacco public education campaign can be effective in reaching hard-to-reach youth at higher smoking risk.

Despite the campaign’s successful reach and appeal to the audience, which are important initial steps for success in changing beliefs,¹⁷ *Fresh Empire* had a limited association

with campaign-related beliefs. This may be due to *Fresh Empire*'s messaging strategy. *Fresh Empire* messages focused on changing perceived norms around tobacco use, with messaging around health consequences being secondary. During formative research, copy testing showed that, on average, each ad had two to five messages (e.g., smoking hinders goals; smoking harms family). The "social branding" approach^{2,8,9} for *Fresh Empire*, which associated not smoking with Hip Hop peer crowd identity,² appears to be less effective compared with previous successful youth tobacco public education campaigns, which typically have three or fewer main messages across creative executions and focus on negative health consequences.^{32,33} Considered in this context, it appears that *Fresh Empire* ads could benefit from reducing the number of messages in ads, using sustained messaging across creative executions, and focusing on negative health consequences. Conducting formative quantitative analyses to link specific messages in ads to outcomes of interest prior to campaign development may also help ensure future campaign success.³⁴

It is also possible that the limited associations observed were due in part to certain belief items having limited "room to move." A number of items had high agreement at wave 1, including attitudes toward living tobacco free, perceived family, friend, and peer disapproval of smoking, and several beliefs about risks of smoking. It is also possible that beliefs focused on general themes of smoking acceptability (i.e., perceived popularity and prevalence) were less amenable to *Fresh Empire* intervention.

Notably, we found no relationship between digital video impressions and beliefs. It is unclear whether this speaks to the usability of digital impressions as a proxy for potential exposure or if this is due to a fundamental difference in the effectiveness of broadcast vs. digital. Research exploring relative impact of broadcast vs. digital on awareness of CDC's *Tips From Former Smokers* adult tobacco public education campaign showed that broadcast television generated greater awareness than digital ad placements, but was less cost efficient than digital in reaching the target audience.³⁵ This emphasizes the fact that digital message delivery operates differently than broadcast. We are unaware of literature that speaks to the ability of digital public education campaigns to change beliefs. The CDC states that digital media serve as promising tools to reach audiences, but there is insufficient evidence to make recommendations regarding the efficacy or optimal means of delivering digital ads.¹⁷ Indeed, we are at the frontier of understanding digital media delivery; it is important to acknowledge the complexity of attributing all digital impressions to individuals as potential exposure given the fragmented nature of the media environment and media buying patterns. In future evaluations, being able to differentiate between skippable and forced-view digital videos would provide more nuanced data on video viewing patterns. Also, being able to extract data at varying levels of video viewing (e.g., 25% and 50%) could help determine minimum view time required to establish a relationship with tobacco-related beliefs.

This study has several limitations. First, although the models control for youth exposure to other national tobacco public education campaigns (*The Real Cost* and *truth*©), this might not account for synergistic effects of other campaigns. Also, exposure to other successful campaigns may have contributed to less "room to move" for certain beliefs to begin with. Second, the lack of significant findings related to digital video impressions should be interpreted with caution as measurement of digital media delivery is an emerging science.

Third, associations with beliefs, and not behavior, were examined in this study. Fourth, at wave 2 a subset of participants who completed surveys online were recruited via snowball sampling (i.e., participants are not independent from one another). We cannot differentiate participants who completed surveys via snowball sampling from other participants who completed surveys online at wave 2 and could not control for snowball sampling in models. Similarly, siblings recruited during household visits at wave 2 and wave 5 are not independent from each other, but sibling recruitment made up a small proportion of the sample (<3%). Finally, participants recruited via mail-based screeners completed the survey(s) at home in the presence of an interviewer and parent or guardian, which may have influenced self-reported beliefs and behaviors for sensitive questions, despite the survey being self-administered via laptop. We controlled for original recruitment source (social media vs. mail-based screening), which accounted for some of this variation. This study has strengths including our reliance on potential campaign exposure measured by market-level media delivery rather than self-reported exposure and having strong participant retention.

Conclusion

After nearly four years on air, *Fresh Empire* successfully generated awareness among the majority of the campaign audience and elicited positive reactions to ads but had a limited association with tobacco-related beliefs among Hip Hop-identified youth. Findings demonstrate that a national, federally-sponsored campaign using a peer crowd approach is capable of reaching and resonating with a hard-to-reach peer crowd at higher risk for smoking. Further research would be useful to understand the ability of peer crowd approaches to change tobacco-related beliefs among youth on a national scale.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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SO WHAT?

What is already known?

Fresh Empire was designed to prevent and reduce tobacco use among Hip Hop-identified Black, non-Hispanic; Hispanic; Asian/Pacific Islander; or multiracial youth. Peer crowd-targeted messages show promise for increasing anti-smoking attitudes and decreasing smoking and smoking susceptibility.

What does this article add?

Fresh Empire ads elicited high levels of awareness and positive reactions among the audience. Exposure to *Fresh Empire* broadcast impressions was associated with beliefs related to addiction/control, being a bad influence on family/friends, and cosmetic smoking effects (no relationship between digital video impressions and tobacco-related beliefs).

What are the implications for health promotion practice or research?

Fresh Empire represents the first large-scale application of a peer crowd strategy to prevent youth tobacco use; that it achieved high levels of awareness and positive receptivity suggests that a national campaign can effectively reach hard-to-reach youth at higher smoking risk. Limited evidence that the campaign was associated with beliefs suggests the “social branding” strategy appears to be less effective than previous successful campaigns focused on negative health consequences. Research is needed to understand differences in effectiveness of broadcast vs. digital media in campaigns.

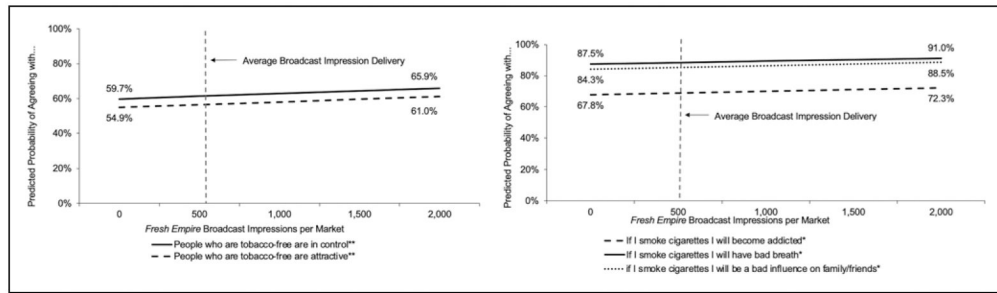


Figure 1.
Predicted probability of agreement with beliefs by broadcast impressions

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Table 1.

Observations by Recruitment Source and Survey Wave.

	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Wave 6	Total
New participants							
ABS	2,001 (91%)	70 ^a (10%)	—	—	563 (62%)	—	2,634
Social media	186 (9%)	612 (90%)	298 (100%)	643 (100%)	340 (38%)	665 (100%)	2,744
Total	2,187	682	298	643	903	665	5,378
Returning participants							
ABS	—	1,635 (95%)	1,533 (88%)	1,197 (83%)	849 (73%)	1,082 (77%)	6,296
Social media	—	80 (5%)	212 (12%)	243 (17%)	319 (27%)	333 (23%)	1,187
Total	—	1,715	1,745	1,440	1,168	1,415	7,483
Combined total	2,187	2,397	2,043	2,083	2,071	2,080	12,861

^aLimited to in home sibling recruitment during household interviews with returning participants from wave 1.

Table 2.

Sample Demographic and Psychographic Characteristics.

Variable	Wave 1 (2,187 ^d), n (%)	Wave 2 (2,397 ^d), n (%)	Wave 3 (2,043 ^d), n (%)	Wave 4 (2,083 ^d), n (%)	Wave 5 (2,071 ^d), n (%)	Wave 6 (2,080 ^d), n (%)	Overall Sample (12,861), n (%)
Participated in previous survey	1,715 (71.5%)	1,745 (85.4%)	1,440 (69.1%)	1,168 (56.4%)	1,415 (68.0%)	7,483 (58.2%)	
Age							
12	147 (6.7%)	38 (1.6%)	1 (0.1%)	—	52 (2.5%)	16 (0.8%)	254 (2.0%)
13	280 (12.8%)	173 (7.2%)	55 (2.7%)	9 (0.4%)	83 (4.0%)	57 (2.7%)	657 (5.1%)
14	338 (15.5%)	263 (11.0%)	214 (10.5%)	107 (5.1%)	90 (4.4%)	85 (4.1%)	1,097 (8.5%)
15	451 (20.6%)	444 (18.5%)	360 (17.6%)	376 (18.1%)	312 (15.1%)	282 (13.6%)	2,225 (17.3%)
16	491 (22.5%)	599 (25.0%)	492 (24.1%)	574 (27.6%)	534 (25.8%)	518 (24.9%)	3,208 (24.9%)
17	480 (22.0%)	662 (27.6%)	575 (28.1%)	682 (32.7%)	634 (30.6%)	729 (35.1%)	3,762 (29.3%)
18	—	218 (9.1%)	346 (16.9%)	335 (16.1%)	366 (17.7%)	393 (18.9%)	1,658 (12.9%)
Gender							
Male	838 (38.3%)	958 (40.0%)	746 (36.5%)	758 (36.4%)	803 (38.8%)	808 (38.9%)	4,911 (38.2%)
Female	1,335 (61.0%)	1,424 (59.4%)	1,284 (62.9%)	1,302 (62.5%)	1,255 (60.6%)	1,257 (60.4%)	7,857 (61.1%)
Race/ethnicity							
White, non-Hispanic	184 (8.4%)	347 (14.5%)	244 (11.9%)	358 (17.2%)	291 (14.1%)	384 (18.5%)	1,808 (14.1%)
Black, non-Hispanic	1,201 (54.9%)	1,167 (48.7%)	1,023 (50.1%)	902 (43.3%)	995 (48.0%)	828 (39.8%)	6,116 (47.6%)
Hispanic	555 (25.4%)	622 (26.0%)	537 (26.3%)	567 (27.2%)	536 (25.9%)	609 (29.3%)	3,426 (26.4%)
American Indian or Alaska Native, non-Hispanic	7 (0.3%)	9 (0.4%)	10 (0.5%)	11 (0.5%)	14 (0.7%)	16 (0.8%)	67 (0.5%)
Asian or Pacific Islander, non-Hispanic	32 (1.5%)	37 (1.5%)	31 (1.5%)	39 (1.9%)	41 (2.0%)	43 (2.1%)	223 (1.7%)
Multiracial, non-Hispanic	190 (8.7%)	198 (8.3%)	186 (9.1%)	195 (9.4%)	183 (8.8%)	186 (8.9%)	1,138 (8.9%)
Household smoking	651 (29.8%)	700 (29.2%)	612 (30.0%)	631 (30.3%)	594 (28.7%)	595 (28.6%)	3,783 (29.4%)
Smoking susceptibility and status							
Never smoker, not susceptible	1,321 (60.4%)	1,275 (53.2%)	1,066 (52.2%)	1,067 (51.2%)	1,175 (56.7%)	1,162 (55.9%)	7,066 (54.9%)
Never smoker, susceptible	384 (17.6%)	416 (17.4%)	272 (13.3%)	219 (10.5%)	228 (11.0%)	229 (11.0%)	1,748 (13.6%)
Experimenter	426 (19.5%)	591 (24.7%)	614 (30.1%)	675 (32.4%)	587 (28.3%)	604 (29.0%)	3,497 (27.2%)
Current or former smoker	45 (2.1%)	89 (3.7%)	72 (3.5%)	96 (4.6%)	69 (3.3%)	713 (34.4%)	442 (3.4%)
Hip Hop score							

Variable	Wave 1 (2,187 ^a), n (%)	Wave 2 (2,397 ^a), n (%)	Wave 3 (2,043 ^a), n (%)	Wave 4 (2,083 ^a), n (%)	Wave 5 (2,071 ^a), n (%)	Wave 6 (2,080 ^a), n (%)	Overall Sample (12,861), n (%)
4-6	1,248 (57.1%)	1,266 (52.8%)	1,131 (55.4%)	1,157 (55.5%)	1,251 (60.4%)	1,260 (60.6%)	7,313 (70.6%)
7-12	939 (42.9%)	1,131 (47.2%)	912 (44.6%)	926 (44.5%)	820 (39.6%)	820 (39.4%)	5,548 (29.4%)

^aNumbers may not total to sample total due to missing data and rounding. Wave 1 did not include 18 year olds. Wave 4 did not include 12 year olds as returning participants have aged up, and new social media recruitment focused on 13- to 17 year olds

Table 3. Percentage of Youth Who Agree or Strongly Agree with Tobacco-Related Beliefs.

KAB Measure	Wave 1 (%)	Wave 2 (%)	Wave 3 (%)	Wave 4 (%)	Wave 5 (%)	Wave 6 (%)
Beliefs about tobacco-free people—agree/strongly agree						
People who are tobacco-free are confident	56.8%	53.5% *	55.1%	55.4%	55.3%	55.1%
People who are tobacco-free are fresh	50.7%	52.8%	56.5% ***	57.9% ***	59.3% ***	61.1% ***
People who are tobacco-free are trendsetters	39.0%	41.4%	41.2%	41.7%	41.1%	40.1%
People who are tobacco-free are in control	52.7%	59.2% ***	62.0% ***	62.2% ***	62.7% ***	66.2% ***
People who are tobacco-free are real	45.5%	45.8%	45.6%	48.1%	48.9% *	49.9% **
People who are tobacco-free are attractive	48.2%	54.1% ***	58.2% ***	60.9% ***	58.4% ***	57.4% ***
Perceived risks of smoking—agree/strongly agree						
If I smoke cigarettes I will... damage my body	90.9%	90.3%	92.2%	93.4% **	93.1% **	95.1% ***
If I smoke cigarettes I will... shorten my life	85.9%	87.2%	88.2% *	88.9% **	88.8% **	89.6% ***
If I smoke cigarettes I will... become addicted to smoking	62.2%	67.0% ***	67.9% ***	68.8% ***	71.4% ***	73.6% ***
If I smoke cigarettes I will... have bad breath	83.7%	85.9% *	87.7% ***	89.2% ***	89.2% ***	90.6% ***
If I smoke cigarettes I will... be a bad influence on family/friends	83.4%	84.2%	84.9%	84.4%	85.1%	85.4% ↑
If I smoke cigarettes I will... be less successful	51.4%	51.9%	51.7%	52.0%	51.8%	51.0%
Attitudes toward living tobacco-free—agree/strongly agree						
I am proud to live tobacco-free	88.1%	84.3% ***	84.5% ***	82.1% ***	84.7% **	83.4% ***
Living tobacco-free is important to me	84.5%	82.6%	82.0% *	81.9% *	84.0%	82.1% *
I am proud to tell other people I live tobacco-free	82.6%	79.6% *	78.9% **	77.8% ***	79.6% *	76.5% ***
Perceived popularity of smoking—agree/strongly agree						
More fresh people smoke cigarettes than people who are not fresh	56.4%	54.4%	57.4%	59.1%	62.7% ***	60.1% *
Rich and famous people are more likely to smoke cigarettes than people who aren't rich and famous	45.3%	40.3% ***	41.4% *	44.4%	47.6%	46.5%
Perceived family, friend, and peer disapproval of smoking—agree/strongly agree						
According to my family, it is very important for me to not smoke cigarettes	89.2%	87.1% *	87.1% *	88.0%	88.8%	88.9%
According to my friends, it is very important for me to not smoke cigarettes	68.1%	67.3%	67.5%	66.6%	71.0% *	70.1%
According to most people my age, it is very important for me to not smoke cigarettes	65.6%	66.9%	67.8%	65.4%	69.2% *	67.3%

KAB Measure	Wave 1 (%)	Wave 2 (%)	Wave 3 (%)	Wave 4 (%)	Wave 5 (%)	Wave 6 (%)
According to the people who hang out where I hang out, it is very important for me to not smoke cigarettes	61.7%	60.0%	60.7%	57.9%*	62.1%	62.0%
Approval of smoking—definitely not/probably not						
Would you... go to a party, concert or event where people are smoking cigarettes?	53.8%	51.7%	49.2%**	46.6%***	52.0%	49.6%**
Would you... hang out with someone who smokes cigarettes?	58.0%	56.5%	53.6%**	51.4%***	57.3%	57.0%
Would you... kiss someone who smokes cigarettes?	84.6%	81.5%**	80.5%***	79.0%***	84.1%	81.2%**
Go out with someone who smokes cigarettes?	81.1%	77.9%**	76.7%***	76.4%***	81.6%	78.5%*
Perceived peer smoking prevalence—any smoking						
How many people who hang out where you hang out smoke cigarettes?	40.5%	43.4%*	40.5%	43.7%*	34.3%***	37.1%*

Difference from Wave 1:

↑ $P < .10$,

* $P < .05$,

** $P < .01$,

*** $P < .001$.

Table 4.

Fresh Empire Campaign Impact on Tobacco-Related Beliefs.

Belief Statement	Broadcast Television Impressions		Digital Video Impressions	
	OR	95% CI	OR	95% CI
People who are tobacco-free are...				
Fresh	0.99	[0.87,1.13]	1.00	[1.00,1.01]
In control	1.22**	[1.07,1.39]	1.00	[1.00,1.01]
Real	0.89	[0.79,1.01]	1.00	[1.00,1.01]
Attractive	1.20**	[1.05,1.36]	1.00	[0.99,1.00]
If I smoke cigarettes I will.				
Damage my body	0.92	[0.74,1.15]	0.99	[0.98,1.00]
Shorten my life	1.11	[0.92,1.35]	0.99	[0.98,1.00]
Become addicted to smoking	1.16*	[1.02,1.32]	1.00	[0.99,1.01]
Have bad breath	1.27*	[1.06,1.53]	1.00	[0.99,1.01]
Be a bad influence on family/friends	1.26*	[1.06,1.49]	1.01	[1.00,1.01]
I am proud to live tobacco-free	1.01	[0.83,1.24]	1.00	[0.99,1.01]
Living tobacco-free is important to me	0.98	[0.82,1.17]	1.00	[0.99,1.01]
I am proud to tell other people I live tobacco-free	1.02	[0.86,1.22]	1.00	[0.99,1.01]
More fresh people smoke cigarettes than people who are not fresh	1.00	[0.88,1.13]	1.00	[0.99,1.00]
Would you... ^a				
Go to a party, concert or event where people are smoking cigarettes?	0.97	[0.84,1.12]	1.00	[0.99,1.01]
Kiss someone who smokes cigarettes?	0.89	[0.72,1.09]	0.99	[0.98,1.00]
Go out with someone who smokes cigarettes?	0.92	[0.77,1.12]	0.99	[0.98,1.00]
How many people who hang out where you hang out smoke cigarettes? ^b	0.88	[0.77,1.01]	1.00	[0.99,1.01]

OR, odds ratio; CI, confidence interval;

* $P < 0.05$,

** $P < 0.01$;

broadcast impressions and digital video impressions scaled by 1000.

^aDichotomized as definitely not/probably not vs. else.

^qDichotomized as any smoking vs. else; remaining belief items dichotomized as strongly agree/agree vs. else; models control for covariates.

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