Peer crowd segmentation for targeting public education campaigns: Hip hop youth and tobacco use

Youn Ok Lee[a,*], Laurel E. Curry[a], Leah Fiacco[a], Amy Henes[a], Matthew C. Farrelly[a], James M. Nonnemaker[a], Leah Hoffman[b], Matthew W. Walker[b]

[a] RTI International, 3040 E. Cornwallis Road, P.O. Box 12194, Research Triangle Park, NC 27709, United States of America
[b] Center for Tobacco Products, Food and Drug Administration (FDA), 10903 New Hampshire Avenue, Silver Spring, MD 20993, United States of America

ARTICLE INFO

ABSTRACT

This study examines the potential association between strength of Hip Hop peer crowd identification and tobacco use in one of the first large samples of Hip Hop youth in the United States. Data are from a geographically-targeted, address-based convenience sample of 2194 youths aged 12–17 who identify with the Hip Hop peer crowd collected via in-person and web interviews in 30 U.S. media markets in 2015. We examined strength of Hip Hop peer crowd identification, perceived peer tobacco use, and tobacco use outcomes. Overall, 18.3% of Hip Hop youth reported current blunt (cigar with added marijuana) use, followed by electronic cigarettes (e-cigarettes) (11.6%), cigar (without added marijuana) (8.8%), hookah (6.5%), and cigarette (5.6%) use. Stronger Hip Hop peer crowd identification was associated with increased odds of using cigarettes (OR = 2.25, p < 0.05), cigars (OR = 2.14, p < 0.05), and blunts (OR = 1.61, p < 0.05), controlling for demographic characteristics and perceived peer tobacco use. Results suggest that a Hip Hop peer crowd–targeted public education prevention campaign for youth can be promising for a variety of tobacco products.

1. Introduction

The 2012 *Preventing Tobacco Use Among Youth and Young Adults* Surgeon General's Report stated that there is "sufficient evidence to conclude that there is a causal relationship between peer group social influences and the initiation and maintenance of smoking behaviors during adolescence" (U.S. Department of Health and Human Services, 2012). Research focused on peer crowds further examines this relationship. Peer crowds represent a shared culture of similar interests, lifestyles, and influencers that transcend race/ethnicity and geography (Moran et al., 2017). Identification with certain peer crowds is associated with health risk behaviors, including smoking (Sussman et al., 2007). A growing body of literature indicates that peer crowd identification can be used to characterize and target high-risk subgroups of youth and young adults for tobacco control interventions that will be salient and appealing (Fuqua et al., 2012; Jordan et al., 2018; Moran et al., 2017; Walker et al., 2018). This is especially useful for media campaign development, as different peer crowds have specific media use patterns that can be used to efficiently reach these groups as target audiences (Moran et al., 2017; Slater, 2007). A peer crowd approach

enables campaigns to more efficiently target and reach specific populations, including those historically underserved, with content that is compelling and relevant to them.

Because of these strengths, public health practitioners are beginning to use peer crowd segmentation to identify and reach high-risk groups of youth with health interventions (Moran et al., 2017; Sussman et al., 2007). Researchers and public health practitioners identify the Hip Hop peer crowd as a promising focus for interventions that address health behaviors among youth (Lee et al., 2014; Lisha et al., 2016; Turner-Musa et al., 2008; Kostygina et al., 2016; Walker et al., 2018).

Hip Hop-identified youth may be at increased risk of tobacco use due to a variety of factors. For example, adolescents are exposed daily to references to tobacco and substance use through music, television and culture (Primack et al., 2008). Content analysis shows that Hip Hop and rap genre songs are significantly more likely than others (pop, rock) to depict substance use (Primack et al., 2008) and that little cigar and cigarillo content on social media frequently contains references to Hip Hop/rap lyrics and urban culture (Kostygina et al., 2016). Exposure to Hip Hop-celebrity-endorsed tobacco products are also associated with increased tobacco use susceptibility (Sterling et al., 2013).

Furthermore, the tobacco industry has a long history of using Hip Hop imagery and signals in their marketing efforts targeting predominately low-income, Black, urban communities with brands such as Kool and Newport (Cruz et al., 2010; Hafez and Ling, 2006). Cigarette marketing campaigns use models, images, language, and settings associated with young, urban culture to convey the values, locations, and tastes of that audience, leading to higher brand appeal and new users (Cruz et al., 2010; Ganz et al., 2018; Richardson et al., 2014).

Overall, this emerging evidence base supports the potential strength of using a peer crowd–targeted approach for tobacco intervention among Hip Hop youth. In May 2015, the Food and Drug Administration's (FDA) Center for Tobacco Products launched the *Fresh Empire* public education campaign targeting at-risk youth who identify with the Hip Hop peer crowd and identify as Hispanic or non-Hispanic and Black, Asian/Pacific Islander, or multiracial. The campaign launched in four cities in Southeastern United States and then expanded to 36 media markets in the United States in October of 2015. *Fresh Empire* is one of a series of efforts by the FDA to educate the public on the harms of tobacco use, and it complements general market youth education campaigns (e.g., "The Real Cost") by targeting youth aged 12–17 who identify with the Hip Hop peer crowd.

Fresh Empire leverages multiple media channels such as TV, print, digital, radio, and events to reach at-risk youth influenced by Hip Hop in the United States. This campaign seeks to change perceived social norms, attitudes, and beliefs that contribute to tobacco use among this population.

This study examines peer crowd identification and tobacco use using the first large convenience sample of youth who identify with the Hip Hop peer crowd in the United States collected for the evaluation of the *Fresh Empire* campaign. We also describe demographic characteristics, marijuana use and other factors among this population. Improved understanding of this peer crowd is needed to contribute to the emerging evidence base for using peer crowd approaches in public health campaigns and for continued development of interventions aimed at reducing tobacco use among Hip Hop multicultural youth. The peer crowd approach can be well matched to the challenges facing tobacco control campaigns, particularly those aiming to efficiently reach a culturally diverse, geographically distributed youth audience.

2. Methods

2.1. Data

Data were collected from an address-based convenience sample of 2194 youths aged 12–17 who identify with the Hip Hop peer crowd. Survey areas were selected using Census Block Groups and estimates from the 2013 American Community Survey to include communities with high proportions of Black, Asian/Pacific Islander, Hispanic, or multiracial youth. Screener surveys were mailed to households in selected survey areas and Hip Hop youth were identified using Rescue Agency's image-based proprietary I-Base Survey™ method for measuring social identity (details in Measures, below) (Lee et al., 2014).

Primary survey data collection consisted of in-person interviews via laptop computer. To supplement in-person data collection, online questionnaires were completed by youth identified as eligible by a web version of the screener advertised on social media platforms (Facebook, Twitter). The survey was conducted July through November 2015 in 30 U.S. media markets (15 treatment markets where campaign activities began in October 2015, and 15 control markets not targeted by the campaign). The protocol for this study was approved by the RTI Institutional Review Board (IRB).

2.2. Measures

Key demographic and psychographic measures included age (in years), gender (male or female), race/ethnicity (non-Hispanic white;

non-Hispanic Black; Hispanic; and non-Hispanic other, including American Indian, Alaska Native, Asian, Native Hawaiian, Pacific Islander, and multiracial), and Hip Hop peer crowd score. Due to the predominance of non-Hispanic Black Hip Hop youth in our sample, this category was used as the referent category in analyses. Hip Hop peer crowd scores, a measure of peer crowd identification, were created using I-Base Survey items. The I-Base Survey asked youth to rank photos of individuals within two photo arrays, one featuring males and the other featuring females, based on their assessment of which individuals would best fit and least fit into their peer group. Photo selections were scored into an index for Hip Hop identification using the same approach described in Lee et al. (2014) and Ling et al. (2014) Participants whose Hip Hop peer crowd index score (range −12 to 12) was 4 or higher were included in the study to ensure all study participants were associated with the Hip Hop peer crowd. For analysis of strength of Hip Hop identification, the index scores for respondents who screened into the survey were scaled from 1 to 2 for ease of interpretation since the raw index score ranged from 4 to 12.

Tobacco and substance use measures included ever use and current (past 30-day) use of cigarettes, smokeless tobacco, cigars, hookah, e-cigarettes, and marijuana. The study also included a measure on current (past 30-day) blunt use, described as "cigars, cigarillos, or little cigars with marijuana added," and past 30-day menthol cigarette smoking (asked of current smokers).

We adapted two smoking susceptibility and use measures (Mowery et al., 2004; Pierce et al., 1996) to describe the stages of cigarette uptake. Categories include youth who are never-smokers and not susceptible to smoking, youth who are never-smokers but are susceptible to smoking, youth cigarette experimenters, and youth who are current or former smokers. Three questions evaluated susceptibility to smoking among never-smokers: (1) "Do you think you will smoke a cigarette in the next year?"; (2) "Do you think that you will try a cigarette soon?"; and (3) "If one of your best friends were to offer you a cigarette, would you smoke it?" Youth who answered "Probably not," "Probably yes," or "Definitely yes" to any of the questions were categorized as susceptible to smoking, while youth who answered "Definitely not" to all three questions were categorized as not susceptible. We defined experimenters as youth who report experimentation with cigarettes but smoked fewer than 100 cigarettes in their lifetime (Bondy et al., 2009; Mowery et al., 2004; Chaffee et al., 2018). We defined current and former smokers as youth who report smoking > 100 cigarettes in their lifetime and who have or have not smoked in the past 30 days, respectively.

Tobacco-related belief measures included normative beliefs about the perceived use of tobacco in one's friend group adapted from previous normative belief measures (Primack et al., 2007). Perceived peer tobacco use items asked participants to report tobacco and tobacco-related product use among close friends ("four closest friends") and extended social groups ("people who hang out where you hang out"). Responses ranged from zero to four friends and from none to all, respectively. Due to small proportions, response categories "three friends" and "four friends" were collapsed into one category for analyses, as were "some friends" and "all friends." Separate items asked participants to report on perceived peer use of cigarettes, menthol cigarettes, smokeless tobacco, marijuana, blunts, cigars, and e-cigarettes. There was not a perceived peer use item on hookah.

2.3. Analysis

We used descriptive statistics to report demographics, Hip Hop peer crowd score, and tobacco use characteristics. We used logistic regression to test for any association between strength of identification with the Hip Hop peer crowd and tobacco use behavior. Race/ethnicity, age, and gender were included as control variables in all models. All analyses were completed with unweighted data (there are no available population-level data with which to weight these data) using Stata 14.

The Hip Hop peer crowd identification measure could potentially act as a proxy for peer tobacco use if we do not control for peer tobacco use. Adolescent smoking status is influenced in part by the smoking status of their peers, especially those with whom they have a close relationship (U.S. Department of Health and Human Services, 2012). However, it may also be that youth choose to be closest with peers whose tobacco use mirrors their own. It is hard to disentangle these two phenomena, known in the literature as peer influence vs. peer selection, respectively (Norton et al., 1998). Not accounting for peer selection could result in an overestimate of the effect of peer tobacco use (Ali and Dwyer, 2009; Manski, 1993, 2000; Norton et al., 1998; Trogdon et al., 2008). However, we do not have a measure of peer selection in our data, therefore any effect we may see of peer tobacco use on adolescent behavior could be explained by peer selection. We therefore used perceived peer tobacco use as a control in the models, but do not present their estimates. While controlling for this factor could be misleading in that this may inflate the actual influence of peers, at the same time it helps us disentangle the effect of Hip Hop peer crowd identification from peer tobacco use. Thus, models were estimated with and without perceived peer tobacco use to examine its effect on the estimate for Hip Hop score.

3. Results

The sample of Hip Hop youth was 54.8% non-Hispanic Black, 25.1% Hispanic, 11.9% other non-Hispanic, and 8.2% non-Hispanic white (Table 1). The sample was composed of more females than males, and most respondents were aged 15–17. Most of the sample were never-smokers not susceptible to smoking cigarettes (60.7%). Another 17.6% were never-smokers susceptible to smoking cigarettes, while 19.6% were cigarette experimenters. Overall, 18.3% of Hip Hop youth reported current blunt use (cigars with marijuana added), followed by e-cigarette (11.6%), cigar (no marijuana) (8.8%), hookah (6.5%), and cigarette (5.6%) use (Table 2).

Mean Hip Hop scores were similar across ever and current users (Table 2). The highest mean Hip Hop score was among current menthol cigarette users (0.45), followed by current hookah users (0.41), current cigarette users (0.40), and current cigar users (0.39). The lowest mean Hip Hop score was among current smokeless users (0.34). It is important to note that the sample size for current use of menthol

Table 1
Demographic and psychographic characteristics of sample, youth in 30 U.S. media markets 2015.

Characteristic	N[a]	%
Age		
12	172	7.8%
13	281	12.8%
14	362	16.5%
15	485	22.1%
16	485	22.1%
17	409	18.6%
Gender		
Female	1340	61.4%
Male	840	38.5%
Race/ethnicity		
Black, non-Hispanic	1202	54.8%
Hispanic	551	25.1%
Other, non-Hispanic	262	11.9%
White, non-Hispanic	179	8.2%
Hip Hop score (mean, range)	1.32	(1, 2)
Smoking susceptibility and use		
Never-smoker, not susceptible	1326	60.7%
Never-smoker, susceptible	385	17.6%
Experimenter	427	19.6%
Current or former smoker	45	2.1%

[a] Numbers may not total sample total (*n* = 2194) due to missing respondent data.

Table 2
Prevalence of ever and current use of tobacco products and corresponding mean Hip Hop score, youth in 30 U.S. media markets 2015.

Product	N (%)	Hip Hop score (range 1–2)	
		Mean	95% CI
Ever use			
Cigarettes	466 (21.4%)	1.36	[1.33, 1.39]
Smokeless tobacco	66 (3.0%)	1.35	[1.27, 1.42]
Cigars, little cigars, or cigarillos[a]	506 (23.3%)	1.37	[1.34, 1.39]
Hookah	388 (17.8%)	1.37	[1.35, 1.40]
E-cigarettes	665 (30.6%)	1.34	[1.32, 1.36]
Use of two or more of the above	596 (27.2%)	1.34	[1.33, 1.36]
Current use (1 or more days in past 30)			
Cigarettes	122 (5.6%)	1.40	[1.35, 1.46]
Menthol cigarettes	55 (2.5%)	1.45	[1.36, 1.54]
Smokeless tobacco	24 (1.1%)	1.34	[1.21, 1.46]
Cigars, little cigars, or cigarillos[b]	193 (8.8%)	1.39	[1.35, 1.43]
Blunts (cigars with marijuana added)	395 (18.3%)	1.37	[1.35, 1.40]
Hookah	142 (6.5%)	1.41	[1.36, 1.46]
E-cigarettes	254 (11.6%)	1.34	[1.30, 1.38]
Use of two or more of the above[a]	178 (8.1%)	1.36	[1.34, 1.38]

[a] Does not distinguish between cigars with or without marijuana added.
[b] Not including blunts.

cigarettes is relatively small, and while statistically significant, results for menthol cigarettes should be interpreted with caution.

Regression results are reported in Table 3. Regression results showed that stronger Hip Hop peer crowd identification was associated with increased odds of using cigarettes in models with and without perceived peer use, cigars, blunts, hookah, and menthol cigarettes, but not e-cigarette use or smokeless tobacco use, controlling for age, gender, race/ethnicity, and perceived peer use. It is important to note that the sample size for current use of menthol cigarettes is relatively small, and while statistically significant, results should be interpreted with caution. For models with and without perceived peer use, age was also associated with all types of product use except for e-cigarette (not significant in model with perceived peer use) and menthol and smokeless use (not significant in either model type), such that as age increased, risk of current use increased. The odds of current cigarette, hookah, and e-cigarette use were higher for non-Hispanic white youth than for non-Hispanic Black youth. The odds of current hookah use were also higher for Hispanic and other/multiracial non-Hispanic youth than for non-Hispanic Black youth in models without perceived peer use. The odds of current cigar use were lower for Hispanic youth than for non-Hispanic Black youth, and in models with perceived peer use, odds of current menthol use were lower for Hispanic and other/multiracial non-Hispanic youth than for non-Hispanic Black youth. Odds of current blunt and smokeless tobacco use were higher for white, non-Hispanic youth than for Black, non-Hispanic youth in models without perceived peer use. The odds of current smokeless tobacco use were higher for males than for females.

4. Discussion

We found that the strength of Hip Hop peer crowd identification is independently associated with higher prevalence of use cigarette, cigar, blunt, and hookah use among Hip Hop youth. Stronger identification with the Hip Hop peer crowd is positively associated with use of these products, even when controlling for demographic factors and perceived peer use. This indicates that the association between stronger Hip Hop peer crowd identification and tobacco product use is not fully explained by the relationship between peer crowd and perceived peer use at the micro-level, among close and extended social groups. As mentioned previously, it may be that Hip Hop peer crowd identification influences tobacco use through other factors, such as increased exposure or

Table 3

Associations between Hip Hop score and current use of tobacco products, youth in 30 U.S. media markets 2015.

Key variable	Model without perceived peer tobacco use[a]		Model with perceived peer tobacco use[b]	
	OR	CI	OR	CI
Current cigarette use		($n = 2178$)		($n = 2135$)
Hip Hop score	3.27***	[1.70, 6.29]	2.25*	[1.09, 4.64]
Current smokeless use		($n = 2124$)		($n = 2179$)
Hip Hop score	1.43	[0.33, 6.21]	1.60	[0.34, 7.48]
Current cigar use		($n = 2171$)		($n = 2097$)
Hip Hop score	2.86***	[1.67, 4.92]	2.14*	[1.20, 3.83]
Current blunt use		($n = 2144$)		($n = 2053$)
Hip Hop score	2.45***	[1.63, 3.69]	1.61*	[1.00, 2.58]
Current hookah use[c]		($n = 2173$)		–
Hip Hop score	3.49***	[1.90, 6.42]	–	–
Current e-cigarette use		($n = 2171$)		($n = 2115$)
Hip Hop score	1.50	[0.92, 2.44]	1.23	[0.72, 2.08]
Current menthol cigarette use among smokers		($n = 119$)		($n = 111$)
Hip Hop score	2.51	[0.74, 8.53]	17.82**	[2.38, 133.23]

[a] Models included control variables for age, gender, and race/ethnicity.

[b] Models included two variables for perceived peer tobacco use of the tobacco product featured in the dependent variables (among four closest friends and among extended social group) in addition to demographic control variables.

[c] Perceived peer tobacco use data not available for hookah use.

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.

receptivity to pro-tobacco norms, music, and associated marketing. These results are consistent with prior findings showing that Hip Hop peer crowd identification is associated with tobacco use (Lee et al., 2014; Lisha et al., 2016). Expanding education efforts among this population to include cigarettes, cigars, and hookah could impact youth tobacco use. Future studies should also examine the relationship between peer crowd identification and other substance use. Notably, there was not a significant relationship between Hip Hop peer crowd and e-cigarette use despite the relative popularity of these products in the sample. Further investigation could assess whether other peer crowds might be more closely associated with e-cigarette use. Future work could also specifically determine the mechanisms by which the strength of peer crowd identification might affect tobacco use and how best to measure peer crowd identification over time.

This study uses one of the largest samples of a single peer crowd collected across the United States. However, results are subject to several limitations. These data were the result of a convenience sample of Hip Hop youth located across 30 U.S. media markets. Results do not necessarily generalize to all multicultural youth or all Hip Hop youth. Because of the cross-sectional nature of these data, we cannot determine causal relationships or tobacco use trajectories. Longitudinal analysis would provide information about causes and use trajectories involving tobacco products in this population. Analyses did not directly compare Hip Hop youth with youth identifying with other peer crowds, nor did it examine dual peer crowd identification; therefore, further study could examine how associations found among Hip Hop youth may be similar to or different than other peer crowds, or among youth who identify with multiple peer crowds.

Overall, these results among the Hip Hop peer crowd suggest that peer crowd–targeted youth public education campaigns are promising for addressing tobacco use. Peer crowd-targeting may be an efficient way to reach the larger population of youth at risk of initiating or escalating use of a variety of tobacco products and merits consideration. Our findings support the potential utility for further research and development of effective messaging to address use of a range of tobacco products, including cigarettes, cigar products, and hookah among the Hip Hop peer crowd.

Implications and contribution

Peer crowd-targeting shows promise for reaching youth at risk of initiating or escalating use of tobacco products with public education campaigns. Results support the need for messaging to address a range of tobacco products, including cigarettes, cigar products, and hookah among the Hip Hop peer crowd.

Disclosure

RTI employees YOL, LEC, LF, AH, MCF, and JCN were involved in components of the study design, analysis, writing, revision, and decision to submit the paper for publication. FDA employees LH and MWW were involved in components of the study design, analysis and interpretation, manuscript drafting, and decision to submit the paper for publication.

References

Ali, M.M., Dwyer, D.S., 2009. Estimating peer effects in adolescent smoking behavior: a longitudinal analysis. J. Adolesc. Health 45 (4), 402–408. https://doi.org/10.1016/j.jadohealth.2009.02.004.

Bondy, S.J., Victor, J.C., Diemert, L.M., 2009. Origin and use of the 100 cigarette criterion in tobacco surveys. Tob. Control. 2009 (18), 317–323. https://doi.org/10.1136/tc.

2008.027276.

Chaffee, B.W., Watkins, S.L., Glantz, S.A., 2018. Electronic cigarette use and progression from experimentation to established smoking. Pediatrics 141 (4), e20173594. https://doi.org/10.1542/peds.2017-3594.

Cruz, T.B., Wright, L.T., Crawford, G., 2010. The menthol marketing mix: targeted promotions for focus communities in the United States. Nicotine Tob. Res. 12, 147–153. https://doi.org/10.1093/ntr/ntq201.

Fuqua, J.L., Gallaher, P.E., Unger, J.B., Trinidad, D.R., Sussman, S., Ortega, E., Johnson, C.A., 2012. Multiple peer group self-identification and adolescent tobacco use. Subst. Use Misuse 47 (6), 757–766. https://doi.org/10.3109/10826084.2011.608959.

Ganz, O., Rose, S.W., Cantrell, J., 2018. Swisher Sweets 'Artist Project': using musical events to promote cigars. Tob. Control. 27 (e1), e93–e95. https://doi.org/10.1136/tobaccocontrol-2017-054047.

Hafez, N., Ling, P.M., 2006. Finding the Kool Mixx: how Brown & Williamson used music marketing to sell cigarettes. Tob. Control. 15 (5), 359–366. https://doi.org/10.1136/tc.2005.014258.

Jordan, J.W., Stalgaitis, C.A., Charles, J., Madden, P.A., Radhakrishnan, A.G., Saggese, D., 2018. Peer crowd identification and adolescent health behaviors: results from a statewide representative study. Health Educ. Behav., 1090198118759148. https://doi.org/10.1177/1090198118759148.

Kostygina, G., Tran, H., Shi, Y., Kim, Y., Emery, S., 2016. 'Sweeter than a Swisher': amount and themes of little cigar and cigarillo content on Twitter. Tob. Control. 25 (Suppl. 1), i75–i82. https://doi.org/10.1136/tobaccocontrol-2016-053094.

Lee, Y.O., Jordan, J.W., Djakaria, M., Ling, P.M., 2014. Using peer crowds to segment black youth for smoking intervention. Health Promot. Pract. 15 (4), 530–537. https://doi.org/10.1177/1524839913484470.

Ling, P.M., Lee, Y.O., Hong, J., Neilands, T.B., Jordan, J.W., Glantz, S.A., 2014. Social branding to decrease smoking among young adults in bars. Am. J. Public Health 104 (4), 751–760. https://doi.org/10.2105/AJPH.2013.301666.

Lisha, N.E., Jordan, J.W., Ling, P.M., 2016. Peer crowd affiliation as a segmentation tool for young adult tobacco use. Tob. Control. 25 (Suppl. 1), i83–i89. https://doi.org/10.1136/tobaccocontrol-2016-053086.

Manski, C.F., 1993. Identification of endogenous social effects: the reflection problem. Rev. Econ. Stud. 60 (3), 531–542.

Manski, C.F., 2000. Economic analysis of social interactions. J. Econ. Perspect. 14 (3), 115–136. https://doi.org/10.1257/jep.14.3.115.

Moran, M.B., Walker, M.W., Alexander, T.N., Jordan, J.W., Wagner, D.E., 2017. Why peer crowds matter: incorporating youth subcultures and values in health education campaigns. Am. J. Public Health 107 (3), 389–395. https://doi.org/10.2105/AJPH.2016.303595.

Mowery, P.D., Farrelly, M.C., Haviland, M.L., Gable, J.M., Wells, H.E., 2004. Progression to established smoking among U.S. youths. Am. J. Public Health 94 (2), 331–337.

Norton, E.C., Lindrooth, R.C., Ennett, S.T., 1998. Controlling for the endogeneity of peer substance use on adolescent alcohol and tobacco use. Health Econ. 7 (5), 439–453. https://doi.org/10.1002/(Sici)1099-1050(199808)7:5<439::Aid-Hec362>3.3.Co;2-0.

Pierce, J.P., Choi, W.S., Gilpin, E.A., Farkas, A.J., Merritt, R.K., 1996. Validation of susceptibility as a predictor of which adolescents take up smoking in the United States. Health Psychol. 15 (5), 355–361. https://doi.org/10.1037/0278-6133.15.5.355.

Primack, B.A., Switzer, G.E., Dalton, M.A., 2007. Improving measurement of normative beliefs involving smoking among adolescents. Arch. Pediatr. Adolesc. Med. 161 (5), 434–439. https://doi.org/10.1001/archpedi.161.5.434.

Primack, B.A., Dalton, M.A., Carroll, M.V., Agarwal, A.A., Fine, M.J., 2008. Content analysis of tobacco, alcohol, and other drugs in popular music. Arch. Pediatr. Adolesc. Med. 162 (2), 169–175. https://doi.org/10.1001/archpediatrics.2007.27.

Richardson, A., Ganz, O., Vallone, D., 2014. The cigar ambassador: how Snoop Dogg uses Instagram to promote tobacco use. Tob. Control. 23 (6 Suppl), 79. https://doi.org/10.1108/17506200710779521.

Slater, M.D., 2007. Reinforcing spirals: the mutual influence of media selectivity and media effects and their impact on individual behavior and social identity. Commun. Theory 17 (1), 281–303. https://doi.org/10.1111/j.1468-2885.2007.00296.x.

Sterling, K.L., Moore, R.S., Pitts, N., Duong, M., Ford, K.H., Eriksen, M.P., 2013. Exposure to celebrity-endorsed small cigar promotions and susceptibility to use among young adult cigarette smokers. J. Environ. Public Health 2013, 520286. https://doi.org/10.1155/2013/520286.

Sussman, S., Pokhrel, P., Ashmore, R.D., Brown, B.B., 2007. Adolescent peer group identification and characteristics: a review of the literature. Addict. Behav. 32 (8), 1602–1627. https://doi.org/10.1016/j.biotechadv.2011.08.021.Secreted.

Trogdon, J.G., Nonnemaker, J., Pais, J., 2008. Peer effects in adolescent overweight. J. Health Econ. 27 (5), 1388–1399. https://doi.org/10.1016/j.jhealeco.2008.05.003.

Turner-Musa, J.O., Rhodes, W.A., Harper, P.T., Quinton, S.L., 2008. Hip-hop to prevent substance use and HIV among African-American youth: a preliminary investigation. J. Drug Educ. 38 (4), 351–365. https://doi.org/10.2190/DE.38.4.c.

U.S. Department of Health and Human Services, 2012. Preventing Tobacco Use Among Youth and Young Adults: A Report of the Surgeon General. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, Atlanta, GA.

Walker, M.W., Navarro, M.A., Hoffman, L., Wagner, D.E., Stalgatis, C.A., Jordan, J.W., 2018. The Hip Hop peer crowd: an opportunity for intervention to reduce tobacco use among at-risk youth. Addict. Behav. 82, 28–34. https://doi.org/10.1016/j.addbeh.2018.02.014.