Smoking expectancies and health perceptions: An analysis of Hispanic subgroups

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Abstract

Research suggests different patterns of cigarette smoking behaviors across Hispanic subgroups. However, research examining differences in known cognitive correlates of smoking behavior (e.g., beliefs about smoking and perceived consequences of smoking) is lacking. The purpose of this study was two-fold. First, given the dearth of research examining cigarette smoking across Hispanic subgroups, we sought to replicate previous findings related to disparities in smoking behavior across four subgroups (i.e., Mexican American, Puerto Rican, Cuban American, and Dominican American). Second, we sought to extend previous work by examining Hispanic subgroup differences across a range of smoking-related cognitive factors (i.e., positive and negative beliefs, perceived health risks, and perceived social consequences). This study used data from 1,021 Hispanic individuals from four universities in the U.S. (i.e., Texas, California, New York, Florida) in a project funded by the American Legacy Foundation. Results indicated that Cuban Americans reported more current smoking than any other subgroup and the most positive beliefs about smoking, although Puerto Ricans endorsed the fewest negative beliefs about smoking out of all the groups. There were also differences across subgroups on some perceived health risks of smoking (e.g., Cubans were most likely to believe that smoking was a risk factor for diabetes) and perceived social consequences of smoking (e.g., Mexican Americans were less likely to perceive negative social consequences from not smoking). This study underscores the need to account for heterogeneity within the Hispanic population in tobacco research to more effectively inform future research and prevention practices.

Keywords

Cigarette smoking; Health perceptions; Hispanics; Social consequences; Smoking-related cognitions

1. Introduction

Approximately 20% of Hispanic adults are smokers (Lorenzo-Blanco & Cortina, 2013). Additionally, Mexican, Puerto Rican, and Cuban Americans have increased levels of light and intermittent smoking behavior over the past two decades (Blanco et al., 2014). Some of the leading causes of death in this population (e.g., cancer, diabetes, stroke) can be caused by cigarette use (CDC, 2018; Dominguez et al., 2015), underscoring the need for continued efforts to reduce smoking among Hispanics.

Tobacco research has largely examined the Hispanic population as a homogeneous group despite evidence of Hispanic subgroup differences in smoking behavior. For instance, some studies suggest that Puerto Ricans have the highest prevalence of lifetime smoking compared to other subgroups (e.g., Parrinello et al., 2015). However, research investigating the potential mechanisms underlying these differences is scarce.

For the present study, we aimed to not only replicate previous subgroup findings related to smoking behavior (e.g., Parrinello et al., 2015), but also to extend upon previous research to address the gap in the literature examining Hispanic subgroup differences in smoking-related cognitions (i.e., smoking-related beliefs, health risks, and social consequences). Prominent theories often used to explain health behavior support the notion that understanding corresponding beliefs is important. For one, The Theory of Reasoned Action (TRA, Fishbein, 1980; Fishbein, & Ajzen, 1975) proposes that behavior is influenced by cognitions (i.e., attitudes and beliefs). Similarly, a core component of the Health Belief Model demonstrates that health behaviors are influenced by individuals' beliefs about the susceptibility and severity of an undesired health condition (Janz & Becker 1984). Previous research suggests attitudes and social norms relate to smoking behaviors (e.g., O'Callaghan, Callan, & Baglioni, 1999). One study found that smoking-related beliefs and attitudes predicted smoking behavior over 70% of the time among Puerto Ricans (Hanson, 1999), however no current research examines how these smoking-related cognitions may vary across Hispanic subgroups.

In the current study, we hypothesized Puerto Ricans would use cigarettes more than other Hispanic subgroups, and that the group who smokes most frequently would hold more positive and less negative beliefs associated with smoking. Additionally, we expected that the group that smokes most often would perceive fewer smoking-related health risks and more negative social consequences associated with not smoking.

2. Method

2.1 Participants

The present study used a subset of data taken from a 2011–2013 online survey of Smoking and Tobacco Use among Hispanic populations funded by the American Legacy Foundation (ALF, 2014). College students from four universities (i.e., Texas, Florida, New York, and California) were recruited via email lists, flyers, and classroom announcements and participated in accordance with respective IRB guidelines. Participants were compensated with $20 gift cards or course credit. A total of 1021 participants were Hispanic (53.9%

female; 72.8% Mexican/Mexican American, 12.1% Puerto Rican; 5.8% Cuban American; 9.3% Dominican American). Participants were between 18 and 19 years old (30%), 20 to 21 years old (27%), 22 to 23 old (18.6%), 24 to 25 (10.3%), and 26+years old (12.5%). For brevity, this paper refers to each group by their heritage country, although participants may also identify as American.

2.2 Measures

2.2.1 Cigarette use.—Participants were asked if they ever tried smoking cigarettes and responded dichotomously (yes/no). Those who had tried a cigarette were asked about their current smoking status and categorized into three groups: non-smokers (tried on   10 occasions), current smokers, and former smokers. Categorical responses captured how often participants smoked cigarettes (e.g., 3 to 5 days, 5 to 9 days) in the last 30 days and their average cigarette use on days they smoked (e.g., 2 to 5 cigarettes, 6 to 10 cigarettes). Participants were classified into smoking status rather than using midpoints from the categorical data to estimate total cigarette usage in the last thirty days.

2.2.2 Perceived effects of cigarette use.—Participants were asked to respond to four sets of items regarding negative and positive beliefs about smoking, health risks, and social consequences associated with smoking (or not) around peers. Items were compiled for this study from common lists in the literature (e.g., Yong & Borland, 2008).

1) **Negative beliefs** (Appendix A). Eight items measured on a 5-point scale from 1–5 (1 = strongly agree) assessed negative beliefs about smoking. Lower scores indicated stronger negative beliefs. Coefficient alpha was 0.86.

2) **Positive beliefs** (Appendix B). Seven items assessing positive beliefs about smoking were scored identical to the negative beliefs measure. Lower scores indicated stronger positive beliefs. Coefficient alpha was 0.85. An expanded version of this scale used with the entire sample in the same data set had a coefficient alpha of 0.88 (Hale, Perrotte, Baumann, & Garza, 2015).

3) **Health risks associated with cigarette use**. Participants indicated their belief that ten health-specific consequences could be attributed to cigarette smoke or second-hand smoke ("yes", "no", or "don't know") including lung cancer, heart disease, colon cancer, asthma (children and adults), crib death, diabetes (children and adults), and two general health questions; "Is 2nd hand smoke harmful?" and, "If someone smoked a pack of cigarettes a day for more than 20 years and quits smoking, will this have great benefits for the person's health?" Data were recoded using "don't know" as a median value: −1 = no, 0 = don't know, 1 = yes.

4) **Perceived social consequences of cigarette use** (Appendix C). Four items assessed perceived consequences of either smoking (or not) around friends who smoke (or do not). For each question, participants responded "yes", "no", or "don't know". Data were recoded: −1 = no, 0 = don't know, 1 = yes. Scores were averaged to create two scores between −1 and 1. Scores closer to 1 indicated more negative social consequences. Cronbach's alpha was 0.78 for the

first scenario (friends smoke, they do not smoke) and 0.82 for the second (friends do not smoke, they do smoke).

2.3 Analysis

A combination of parametric and non-parametric ANOVAs and pairwise comparisons were conducted using SPSS version 21; non-parametric tests were used when violation of homogeneity of variance occurred. First, we compared Hispanic subgroups on cigarette use prevalence. Then, we compared Hispanic subgroups on each of our perceived effects of smoking variables. Pairwise comparisons used a Bonferroni adjustment to account for multiple tests.

3.   Results

3.1   Cigarette Use

Cubans reported the highest rate of ever trying cigarettes at 74.60%, followed by Puerto Ricans at 70.20%, Mexicans at 67.20%, and Dominicans at 57.90%. A binary logistic regression suggested no Hispanic subgroup differences for having tried cigarettes ($\chi^2(1021,3) = 5.59$, $p = 0.134$).

Participants were then categorized into one of three smoking groups; non-smokers (tried on 10 or fewer occasions), former smokers, and current smokers. Cubans (40.70% smokers, 13.60% former smokers, 45.80% non-smokers) had the highest percentage of current smokers, followed by Puerto Ricans (34.70% smokers, 6.50% former smokers, 58.90% non-smokers) and Mexicans (26.10% smokers, 14.50% former smokers, 59.40% non-smokers), and Dominicans (11.60% smokers, 1.10% former smokers, 87.40% non-smokers).

3.2   Perceived Effects of Cigarette Use

3.2.1   Negative and Positive beliefs—Nonparametric tests (i.e., Kruskal-Wallis ANOVA, Mann-Whitney U test for pairwise comparisons) were used to examine group differences in positive and negative beliefs. See Table 1 for detailed results. There were differences between subgroups on endorsement of negative beliefs about cigarette smoking ($\chi^2(1019, 3) = 13.95$, $p = 0.003$). Puerto Ricans endorsed negative beliefs about smoking less than both Mexicans and Dominicans.

Data also indicated differences between the subgroups on positive beliefs ($\chi^2(1019, 3) = 8.19$, $p = 0.042$, see Table 1). Cubans had more positive beliefs about smoking cigarettes compared to Mexicans and Dominicans, while Puerto Ricans had more positive beliefs compared to Dominicans.

3.2.2   Perceived health risks—Health risks were compared individually to provide specific information on where differences may exist (see Table 2). Nonparametric statistics were employed for: quitting benefits, 2nd hand smoke, lung cancer, and asthma in both children and adults. The remaining five health risk perception outcomes were tested using parametric and nonparametric ANOVAs, with the latter reported here for consistency. There were differences between groups on 8 of the 10 health outcomes.

There were no group differences for health risk perceptions pertaining to either lung cancer or heart disease. Mexicans were more likely than Puerto Ricans and Cubans to believe that 2nd hand smoke was harmful; however, Cubans were the most likely to believe there are benefits to quitting smoking and that smoking is a risk factor for diabetes in adults and children. Additionally, Cubans were more likely than Mexicans to think that smoking leads to colon cancer, and both Cubans and Puerto Ricans were most likely to think that smoking leads to crib death. Mexicans and Dominicans were most likely to think that smoking leads to asthma in both children and adults.

3.2.3   Perceived social consequences of cigarette use.—No group differences were found on expected social consequences of smoking around friends who do not smoke (χ^2(954, 3) = 6.59, p = 0.086). Means and standard deviations (*M/SD*) are as follows: Mexican (−.43/.62), Puerto Rican (−.39/.65), Cuban (−.28/.61), and Dominican (−.52/.57). There were group differences on the expected social consequences of not smoking around friends who do smoke (χ^2(1002, 3) = 26.96, p < 0.001). Means and standard deviations (*M/SD*) are as follows: Mexican (−.62/.46), Puerto Rican (−.39/.62), Cuban (−.40/.55), and Dominican (−.60/.46). On average, no group believed that not smoking around smokers would lead to negative social consequences. However, when compared to Mexicans, both Cubans (U = 16820.5, p <0.01) and Puerto Ricans (U = 3429.0, p <0.001) reported expecting more negative social consequences from not smoking around friends who do smoke. When compared to Dominicans, the same relationships were found; both Cubans (U = 2153.0, p = 0.008) and Puerto Ricans (U = 4411.5, p = 0.002) reported there would be more negative social consequences from not smoking.

4.   Discussion

The current study examined how cigarette use differed across Hispanic subgroups and assessed Hispanic subgroup differences in smoking-related beliefs, health risk perceptions about cigarette use, and the perceived social consequences of smoking. To our knowledge, this is the first study to examine Hispanic subgroup differences on smoking-related cognitions.

Our results partially supported our hypotheses. Previous research often suggests Puerto Ricans smoke more than other Hispanic subgroups (e.g., CDC, 2018). However, in our sample, Cubans smoked more than Puerto Ricans. As predicted, the group with the highest prevalence of cigarette use (i.e., Cubans) endorsed the most positive beliefs about smoking. Also, Cubans and Puerto Ricans believed that not smoking around friends who do smoke would lead to more negative social consequences compared to the beliefs reported by other groups. These results are aligned with research suggesting attitudes and social norms influence smoking behaviors, such as TRA (e.g., O'Callaghan et al., 1999). In this case, it is possible that Cubans and Puerto Ricans may engage in smoking behaviors to avoid negative social consequences.

Contrary to expectations, Cubans in this sample had the highest percentage of current smokers but perceived the greatest health risks from smoking and the most benefits to cessation. This suggests several possibilities that warrant further research. One is that

perhaps Cubans in this sample, having a higher rate of smokers, had more experience with the risks of smoking. Our Cuban sample also had a high rate of former smokers, who would have direct experience with both the risks of smoking and the health benefits of cessation. Alternatively, behavior may have been influenced by other consequences relating to smoking behavior. For example, the Cuban sample reported more negative social consequences of not smoking compared to other subgroups. Further investigation is needed to address these possibilities.

Like all studies, the present study has some limitations. First, the college student sample potentially limits generalizability. Also, the use of alternative tobacco products (ATP) is on the rise (Richardson, Williams, Rath, Villanti, & Vallone, 2014) but not accounted for in this study; future research should investigate ATPs across Hispanic subgroups. Despite these limitations, this study demonstrates that smoking-related cognitions and behaviors vary between Hispanic subgroups, underscoring the need for more subgroup specific tobacco research in order to inform more effective future research and intervention practices.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Funding acknowledgment:

References

American Legacy Foundation (2014). A study of tobacco-related health disparities in Hispanic/Latino subpopulations. Retrieved from http://legacyforhealth.org/content/download/5729/72319/version/2/file/Latino_College_Health_Initative_2014.pdf.

Blanco L, Garcia R, Pérez-Stable EJ, White MM, Messer K, Pierce JP, & Trinidad DR (2014). National trends in smoking behaviors among Mexican, Puerto Rican, and Cuban men and women in the united states. American Journal of Public Health, 104(5), 896–903. doi:10.2105/AJPH. 2013.301844 [PubMed: 24625159]

Centers for Disease and Control Prevention (2018). Hispanics/Latinos and Tobacco Use. Retrieved from: https://www.cdc.gov/tobacco/disparities/hispanics-latinos/index.htm

Dominguez K, Penman-Aguilar A, Chang MH, Moonesinghe R, Castellanos T, Rodriguez-Lainz A, & Schieber R (2015). Vital signs: leading causes of death, prevalence of diseases and risk factors, and use of health services among Hispanics in the United States—2009–2013. MMWR. Morbidity and mortality weekly report, 64(17), 469. [PubMed: 25950254]

Fishbein M (1980). A theory of reasoned action: Some applications and implications. Nebraska Symposium on Motivation. Nebraska Symposium on Motivation, 27, 65–116.

Fishbein M, & Ajzen I (1975). Belief, attitude, intention, and behavior: An introduction to theory and research. Reading, MA: Addison-Wesley.

Hale WJ, Perrotte JK, Baumann MR, & Garza RT (2015). Low self-esteem and positive beliefs about smoking: A destructive combination for male college students. Addictive Behaviors, 46, 94–99. [PubMed: 25838000]

Hanson MJS (1999). Cross-cultural study of beliefs about smoking among teenaged females. Western Journal of Nursing Research, 21(5), 635–651. [PubMed: 11512184]

Janz NK, & Becker MH (1984). The health belief model: A decade later. Health education quarterly, 11(1), 1–47. [PubMed: 6392204]

Lorenzo-blanco E, & Cortina LM (2013). Latino/a depression and smoking: An analysis through the lenses of culture, gender, and ethnicity. American Journal of Community Psychology, 51(3–4), 332–46. doi:10.1007/s10464-012-9553-3 [PubMed: 22956250]

O'Callaghan FV, Callan VJ, & Baglioni A (1999). Cigarette use by adolescents: attitude-behavior relationships. Substance use & misuse, 34(3), 455–468. [PubMed: 10082067]

Parrinello CM, Isasi CR, Xue X, Bandiera FC, Cai J, Lee DJ, … Kaplan RC. (2015). Risk of cigarette smoking initiation during adolescence among US-born and non-US-born Hispanics/Latinos: The hispanic community health Study/Study of latinos. American Journal of Public Health, 105(6), 1230–1236. [PubMed: 25322293]

Richardson A, Williams V, Rath J, Villanti AC, & Vallone D (2014). The next generation of users: Prevalence and longitudinal patterns of tobacco use among US young adults. American Journal of Public Health, 104(8), 1429–36. [PubMed: 24922152]

Yong HH, & Borland R (2008). Functional beliefs about smoking and quitting activity among adult smokers in four countries: findings from the International Tobacco Control Four-Country Survey. Health psychology: official journal of the Division of Health Psychology, American Psychological Association, 27(3S), S216–S223.

Table 1.

Negative and Positive beliefs about smoking.

	Negative belief mean (SD)	Compared to	Mann-Whitney U	Z	p
Mexican	1.49 (.33)	Puerto Ricans	36130.00	−3.508	<0.001 [*]
		Cubans	20476.50	−0.647	0.518
		Dominicans	31090.00	−1.013	0.311
Puerto Rican	1.79 (.69)	Cubans	3234.50	−1.217	0.224
		Dominicans	4182.50	−2.993	0.003 [*]
Cuban	1.77 (.88)	Dominicans	2425.00	−0.956	0.339
Dominican	1.53 (.55)				
	Positive belief mean (SD)	Compared to	Mann-Whitney U	Z	p
Mexican	3.41 (.93)	Puerto Ricans	42232.5	−1.442	0.149
		Cubans	18396.5	−2.030	0.042 [**]
		Dominicans	32417.5	−1.256	0.209
Puerto Rican	3.29 (.91)	Cubans	3354.5	−0.907	0.364
		Dominicans	4955.0	−2.014	0.044 [**]
Cuban	3.18 (.96)	Dominicans	2160.0	−2.391	0.017 [**]
Dominican	3.54 (.95)				

Note.

[*] Significant at Bonferroni adjusted $p < 0.008$,

[**] Significant at $p < 0.05$

Table 2.

Descriptive Statistics and Pairwise Comparisons across Groups on Perceived Negative Health Consequences of Cigarette Use

	Quitting benefits[**]	Harm of 2nd hand smoke[*]	Lung Cancer	Asthma, children[*]	Asthma, adults[**]
Mexican	0.14 (0.34)^a	0.89 (0.16)^a	0.74 (0.02)^a	0.83 (0.02)^a	0.76 (0.02)^a
Puerto Rican	0.23 (0.08)^a	0.68 (0.06)^{bc}	0.63 (0.06)^b	0.63 (0.07)^{bc}	0.66 (0.06)^{bc}
Cuban	0.53 (0.11)^b	0.75 (0.08)^c	0.72 (0.09)^{ab}	0.65 (0.10)^c	0.60 (0.09)^c
Dominican	0.13 (.10)^a	0.84 (0.05)^{abc}	0.79 (0.06)^a	0.79 (0.06)^{abc}	0.79 (0.06)^{abc}
χ^2	10.38	21.83	7.04	16.66	9.39
p	.016	<.001	0.071	0.001	0.024

	Heart Disease	Colon Cancer[**]	Crib Death[*]	Diabetes, children[**]	Diabetes, adults[*]
Mexican	0.44 (0.03)	0.03 (0.03)^a	0.20 (0.03)^a	−0.22 (0.03)^a	−0.27 (0.03)^a
Puerto Rican	0.41 (0.07)	0.04 (0.08)^a	−0.01 (0.08)	−0.15 (0.07)^a	−0.08 (0.07)^{bc}
Cuban	0.53 (0.10)	0.37 (0.11)	0.37 (0.11)^a	0.08 (0.10)	0.11 (0.11)^c
Dominican	0.52 (0.08)	0.10 (0.09)^a	0.28 (0.08)^a	−0.21 (0.08)^a	−0.20 (0.08)^{ab}
χ^2	2.31	8.93	13.77	10.60	17.94
p	0.510	0.030	0.003	0.014	<0.001

Note.

[*] Significance at Bonferroni adjusted $p < 0.005$.

[**] Significant at $p < 0.05$. For items in which a significant effect of group was found, means not sharing the same superscript significantly differ from each other (Mann-Whitney U-tests, $p < 0.05$)