Rationale: Tobacco companies use advertising to target vulnerable populations, including youth, racial/ethnic minorities, and sexual minorities.

Objective: We sought to examine how personal identity affects support for population-specific anti-smoking advertisements that could serve as countermeasures to industry marketing practices.

Methods: In 2014–2015, we surveyed probability phone samples of adults and adolescents ($n = 6,139$) and an online convenience sample of adults ($n = 4,137$) in the United States. We experimentally varied the description of tobacco industry marketing practices (no description, general, or specific to a target group). The four prevention target groups were teens; African Americans; Latinos; and gays, lesbians, and bisexuals (GLBs). Participants were either members or non-members of their prevention target group.

Results: Support was highest for anti-smoking advertisements targeting teens, moderate for Latinos and African Americans, and lowest for GLBs. In-group members expressed higher support than out-group members when anti-smoking advertisements targeted African Americans, Latinos, and GLBs (all $p < 0.05$). However, when teens were the target prevention group, in-group members expressed lower support than out-group members ($p < 0.05$). The description of industry marketing practices did not have an effect. Results were similar across the phone and online studies.

Conclusions: Our findings suggest that the public strongly supports advertisements to prevent smoking among teens, but support for similar efforts among other vulnerable populations is comparatively low. Anti-smoking campaigns for vulnerable populations may benefit from a greater understanding of the role of social identity in shaping public support for such campaigns.

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1. Introduction

The leading preventable cause of death in the United States is tobacco use (CDC, 2014). However, smoking rates and consequences are not distributed evenly across the population. Youth are by far the most likely to initiate smoking (Chen and Jacques-Tiura, 2014). Among adults, the highest rates of smoking are among low-income individuals, people with mental health problems, and gays, lesbians, and bisexuals (GLBs; Annamalai et al., 2015; Jamal et al., 2015; Lee et al., 2009). The incidence of lung cancer is substantially higher among African Americans than whites, with the majority of cases being attributable to cigarette smoking (Haiman et al., 2006). Among males over age 50, African Americans have a higher rate of smoking-attributable mortality than whites (Ho and Elo, 2013). Given that Hispanics are a fast-growing segment of the U.S. population, smoking and its related health consequences in this group are of particular interest (Johnson and Lichter, 2008).

The tobacco industry has historically targeted vulnerable populations with marketing that may have contributed to disparities in smoking and subsequent health problems. For example, R.J. Reynolds Tobacco Company developed Project SCUM (Sub-Culture Urban Marketing) in 1995 as a strategy for marketing Camel and...
Red Kamel cigarettes to gay residents and homeless individuals in the San Francisco area (Stevens et al., 2004; Washington, 2002). Philip Morris has targeted the Hispanic community in the U.S. since 1988 by sponsoring and distributing cigarettes at cultural and sporting events (Washington, 2002). Tobacco companies have also targeted African Americans by advertising in major African American publications such as *Ebony* and making large donations to advocacy organizations such as the National Association for the Advancement of Colored People (Anderson, 2011; Washington, 2002).

The Internet has provided tobacco companies with new opportunities to reach vulnerable populations beyond traditional marketing strategies and media. Online e-cigarette marketing to adolescents exemplified the utility of this platform. As of 2014, online vendors were selling 7,764 flavors of e-liquid, including candy and other sweet flavors that may be particularly appealing to children and adolescents (Zhu et al., 2014). The unregulated nature of the Internet could facilitate better targeted marketing of tobacco products to minority populations (Liang et al., 2015; Ribisl, 2003).

Anti-smoking campaigns that target vulnerable groups can be effective countermeasures to industry marketing practices. Public support allows agencies to implement programs that target diverse groups, and the lack of such support can imperil new programs (Sun, 2014). Furthermore, public support for anti-smoking advertising campaigns may increase their impact (Samu and Bhatnagar, 2008). Targeted anti-smoking campaigns that have public support may also encourage interpersonal communication among community members about smoking behaviors, potentially increasing campaign effectiveness (Hall et al., 2015; Sun, 2014). Finally, within targeted communities, support by key opinion leaders may be especially important to the viability and longevity of anti-smoking campaigns (Howard et al., 2000; Valente and Pumpuang, 2006).

Support for anti-smoking advertisements may vary by social identity. According to social identity theory, social interactions make people aware of similarities to and differences with others when social categories, such as race and sexual orientation, become salient (Hornsey, 2008). When social categories are salient, people enhance similarities within their own group and differences between their group and other groups (Hogg and Reid, 2006). They also try to protect their own group and improve its status in order to maintain a positive social identity (Major et al., 2013). Social identity theory can provide insights about health and well-being (Haslam et al., 2009). For example, if group identity is made salient in health-related campaign materials, in-group members’ desire to improve the health of their peers may enhance support for that health campaign.

Drawing on some aspects of social identity theory, we hypothesized that support for targeted anti-smoking campaigns is higher among in-group members of a target population compared to out-group members. We also hypothesized that anti-smoking advertisements targeting teens would elicit the greatest support because people view youth as a vulnerable group that society should protect, and many are already aware that the tobacco industry targets youth (Henriksen et al., 2004; Landman et al., 2002; Slater et al., 2007). We examined these hypotheses in two national experiments.

2. Experiment 1

2.1. Methods

**Sample.** From September 2014 to June 2015, the Carolina Survey Research Laboratory (CSRL) conducted phone surveys with a probability sample of 5,014 U.S. adults ages 18 or older identified using random digit dial landline and cell phone frames. Additional information on sampling and methodology is available elsewhere (Boynton et al., 2016). Interviewers obtained verbal consent from adult participants. CSRL also conducted a phone survey with a probability sample of 1,125 adolescents aged 13 to 17 from November 2014 to June 2015. Interviewers obtained verbal parental consent and adolescent assent. The survey included smokers and non-smokers in order to capture support for targeted anti-smoking advertisements among a variety of stakeholders. The Institutional Review Board at the University of North Carolina approved both studies.

**Procedures.** We randomly assigned participants to one of 24 conditions in a $3 \times 4 \times 2$ between-subjects factorial experiment. The first factor was industry marketing practices: no statement about these practices, a general statement (i.e., “Cigarette companies target certain groups with advertising”), or a population-specific statement (i.e., “Cigarette companies specifically target [teens; gays, lesbians, and bisexuals; African Americans; or Latinos] with advertising”). The second factor was the prevention target group that anti-smoking advertisements would focus on: teens, GLBs, African Americans, or Latinos. The third factor was in-group membership (i.e., whether the respondents themselves were teens, GLBs, African Americans, or Latinos). We assigned participants, in the order above, to respond about their own group. Participants who were not members of any of the four prevention target groups responded about a randomly-assigned group. Assignment to the industry marketing practice condition was also random.

**Measures.** The survey assessed support for anti-smoking advertisements with the question, “How much would you support organizations like the CDC running anti-smoking advertisements for [prevention target group]?” The response options were “not at all”, “a little”, “somewhat”, or “a lot” (coded as 1–4). The survey also measured sex, age, participant education (adults), maternal education (adolescents), income (adults), race, ethnicity, sexual orientation (adults), numeracy, and smoking status. We defined adult current smokers as those who had smoked at least 100 cigarettes in their lifetime and currently smoked every day or some days and adolescent current smokers as those who had smoked at least one cigarette in the past 30 days (Arrozola et al., 2015; Davis et al., 2009).

**Data analysis.** We analyzed data from the phone and online surveys separately. We excluded 202 participants who did not respond to the primary outcome measure, resulting in an analytic sample of 5,937 participants. Missing data were more common for people in the GLB than teen prevention target group conditions and for in-group than out-group members (both $p < 0.001$). To check whether random assignment created demographically equivalent groups by industry marketing practices (no statement, general, or specific), we used chi-square tests and $t$-tests. Among “out-group” members (i.e., adults who were not GLBs, African-Americans, or Latinos), we used the same procedures for checking successful randomization into prevention target group. Five demographic characteristics of adult participants (sex, race, ethnicity, education, and sexual orientation) and four demographic characteristics of adolescent participants (sex, race, ethnicity, and maternal education) were equivalent across experimental conditions ($11 \times 11$ tests, all $p > 0.05$).

We used $3 \times 4 \times 2$ between-subjects ANOVA to examine the effects of industry marketing practices (no statement, general, or specific), prevention target group (teens, GLBs, African Americans, or Latinos), and in-group membership on support for anti-smoking advertisements. Statistical analyses used SAS (v 9.4) and a critical alpha of 0.05, except for post-hoc pairwise $t$-tests that used Holm-Bonferroni adjustments to critical alpha.
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