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## Translating the Link between Social Identity and Health Behavior into Effective Health Communication Strategies: An Experimental Application Using Anti-Smoking Advertisements

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An individual's social identity is "a self-definition in terms of social category membership" (Turner, 1999, p. 10) or "the individual's knowledge that he belongs to certain social groups together with some emotional and value significance to him of the group membership" (Tajfel, 1972, p. 292). Of relevance to health communication practitioners and researchers is evidence linking social identity to a variety of health-related behaviors (Haslam, Jetten, Postmes & Haslam, 2009). However, limited research has investigated social identity as a target for health communication campaigns and interventions. The current study seeks to address this gap via an experiment testing the efficacy of social identity as a construct for use in health communication materials. Specifically, we examine the efficacy of print ads targeting adolescents' social identity as member of peer groups (e.g. peer group identification). We focus on ads designed to prevent adolescent cigarette smoking because of the body of evidence linking this behavior to identity-related motivations and because of the significant public health impact of this behavior.

### Teen Cigarette Use

Although rates of cigarette use among teens have declined in recent years, data indicate that approximately ten percent of twelfth graders are daily smokers (Johnston, O'Malley, Bachman & Schulenberg, 2011) and 18.7% have smoked in the past 30 days. Additionally, the majority of adult smokers start before the age of 18 (Substance Abuse and Mental Health Service Administration: SAMHSA, 2006). Given the significant public health impact of cigarette use (Centers for Disease Control: CDC, 2011; U.S. Surgeon General's Office, 2004; U.S. DHHS, 2012), these rates of teen smoking are causes for concern. The relationship between social identity and cigarette use in teenagers has an exceptionally strong body of support (see Sussman, Pokhrel, Ashmore & Brown, 2007 for a review; also see U.S. DHHS, 2012, pgs. 441–443). For many adolescents, the motivation to smoke stems from a desire to express their social identity as a member of a peer group – that is, a group of others with similar values, style preferences and hobbies (Sussman et al., 2007; Moran,

Murphy & Sussman, 2012). Specifically, certain peer groups have high risk behavior profiles, and adolescents who identify with those groups are more likely to engage in those risk behaviors, including cigarette use (Sussman et al., 2007).

## Empirical and Theoretical Framing

The basis for the current study is grounded in two bodies of literature. First, we look at empirical work on peer group identification, in which adolescents' identification with certain "reputation-based crowds" may impact their health behavior (Sussman et al., 2007; Sussman, Moran & Pokhrel, 2012). Second, we use social identity theory as an overarching framework to explain the link between peer group identification and risky health behavior (peer group identification is a form of social identity). We also use social identity theory to ground our rationale for use of this construct in health communication materials.

### Peer Group Identification and Social Identity

A peer group is a reputation-based collective or subculture with which an adolescent identifies (Sussman et al., 2007). Research has consistently found five primary groups with which adolescents identify: elites, academics, athletes, deviants and others (Sussman et al., 2007). A few factors make the concept of peer group identification particularly relevant to the study of mass media anti-smoking campaigns. First, strong evidence indicates that peer group identification is associated with cigarette smoking (Dolcini & Adler, 1994; La Greca, Prinstein & Fetter, 2001; Michell, 1997; Mosach & Leventhal, 1988; Sussman et al., 1990; Sussman et al., 1993; Sussman et al., 1994; Sussman et al., 1999; Urberg, 1992). Specifically, this evidence indicates that adolescents who identify with a deviant group (or an elite group in a few studies) are more likely to smoke. Second, peer groups are characterized not only by risk behavior, but by other factors such as activities and hobbies, fashion/style and media preferences (Sussman et al., 2007). This provides researchers and practitioners with a large arsenal of cues through which they can target youth who identify with a specific peer group. Finally, peer group identification is not contingent upon actual, face-to-face contact with other youth who identify with the group (Moran, 2013). In other words, many adolescents learn the various values, styles and behaviors associated with a peer group through media (Moran, 2013). These characteristics indicate that ads targeting specific peer groups may be a useful strategy for the construction of mass media anti-smoking campaigns.

Social identity theory (Hogg & Abrams, 1999; Tajfel, 1978; Tajfel and Turner, 1979; Turner, 1999) provides a useful framework to understand the mechanism through which peer group identification affects cigarette use. According to social identity theory, individuals develop identities based on the social group categories with which they affiliate. Individuals possess prototypes for these groups. These prototypes are essentially cognitive representations of the group norms – that is, what it means to be a group member. As individuals identify more strongly with a group, social identity theory posits that he or she is more likely to act in accordance with a relevant in-group prototype. In the case of adolescent cigarette use, if an adolescent identifies strongly with a peer group and perceives smoking to be prototypical of that group, that adolescent would be more likely to smoke cigarettes (Sussman et al., 2007). To be clear, although social identity can encompass many forms,

such as identity as a member of a racial/ethnic group, peer group identity as we conceptualize and measure it exists specifically within the context of one's reputation-based peer collective and as such, would not explicitly include broader, inter-generational groups as might racial/ethnic identity.

### **Social Identity Theory and Health Communication Campaigns**

A limited but growing body of research has applied the principles of social identity theory to health communication campaigns. Slater (2007) has argued that media use varies based on social identity, with specific groups having prototypical patterns of media use. Comello (2013) has expanded upon this area of study and developed the prism model through which the relationship between identity and media use can be understood. Specifically, Comello (2013) makes two distinct predictions: first, that the effect mass media have on behavior is mediated by that individual's identity/ies and (2) that this effect is also moderated by that viewer's identity/ies. Comello's (2013) mediational hypothesis posits that an individual's social identity can mediate the effect of media exposure, such that media can activate, or make salient, an individual's social identity as a member of a particular group, thus prompting the individual to act in accordance with that group's prototype. Comello's (2013) moderation hypothesis proposes that the impact a media-based communication has on an individual's behavior will vary based on the group or groups with which that individual identifies. Specifically, when an individual views a message targeted to a relevant group with which he or she identifies, he or she will be more likely to act in accordance with the ad's message; thus these identity targeted communications have a greater persuasive effect on that individual.

Although there is evidence supporting both the mediational and moderating components of the prism model (Berger & Rand, 2008; Comello & Slater, 2011), the moderation hypothesis is more useful for work leveraging peer group identification in anti-smoking ads. This is because, for a health communication practitioner to leverage the mediational role of viewer peer group identity, he or she would need to create ads which make salient a peer group identity for which not smoking is prototypical. According to the prism model, the viewer would then be primed to behave in accordance with this identity's 'non-smoking' prototype. However, those individuals who identify with these groups are generally at low-risk for smoking and thus, to target these individuals would be inefficient. Additionally, group identities are often very important to adolescents (Newman & Newman, 2001); thus, it would be difficult for a health communication intervention to get youth to change the peer groups with which they most closely identify.

The moderating role of viewer identity offers a more promising strategy. Here, a practitioner can target viewers based on the peer group with which they identify, and thus can design ads targeting those high-risk youth based on their peer group identity. The moderating role identity plays would thus impact the effectiveness of that ad, such that when the ad targets a particular group, members of that group would be more responsive to the ad. Additionally, empirical evidence indicates that the moderation hypothesis is appropriate for anti-smoking research. Moran and colleagues (2012) examined the effectiveness of the truth® campaign, which was designed to target adolescents who identified with high-risk, non-mainstream

groups (Evans, Wasserman & Bertoletti., 2002). The researchers found that youth who identified with at-risk groups exhibited a greater increase in anti-smoking attitudes than youth who did not identify with those groups. In other words, the adolescents' peer group identity moderated the impact of the truth® campaign, such that the campaign was more effective among youth who identified with high-risk, non-mainstream groups. Additionally, Ling, Lee, Jordan, Neilands and Glantz (2012) found that a social marketing anti-smoking intervention targeting the “Hipster” group decreased past-30 day smoking among individuals in this peer group, offering similar support for the moderating role of peer group identity.

It should be noted that although anti-smoking interventions that target specific adolescent peer groups are relatively new, there have been many efforts targeting adolescents based on other factors. Research indicates that these targeted interventions tend to be more effective than those that are not. For example, compared to the non-targeted “Think. Don't Smoke.” campaign (sponsored by Philip Morris), exposure to the truth® campaign, which targeted high risk youth, was more strongly associated with anti-smoking and anti-tobacco company beliefs, while exposure to the “Think. Don't Smoke.” campaign was associated with an increased susceptibility to smoking (Farrelly, Healton, Davis, Messeri, Hersey & Haviland, 2002). Experimental research underscores the increased effectiveness of campaigns targeting high risk youth as compared to low risk youth (Flynn, Worden, Secker-Walker, Pirie, Badger & Carpenter, 1997).

Sensation seeking has also been used by health communication practitioners and researchers to target adolescents because youth high in sensation seeking are at increased risk for substance use (Palmgreen, Donohew, Lorch, Hoyle & Stephenson, 2001; Stephenson & Palmgreen, 2001). Evans, Price and Blahut (2005) found that the effects of the truth® campaign (which was designed to have a high sensation value: Farrelly, Niederdeppe & Yarsevich, 2003) were modestly moderated by sensation seeking. Other work indicates that targeting youth based on sensation seeking (e.g. the SENTAR approach: Palmgreen et al., 2001) increases the likelihood that a high sensation seeking adolescent attends and responds to a message (Palmgreen et al., 2001; Stephenson & Palmgreen, 2001). The evidence supporting the effectiveness of targeted anti-smoking campaigns coupled with evidence indicating certain peer groups are at higher risk for smoking illustrate the importance of investigating the efficacy of anti-smoking messages that target specific peer groups.

## Current Study

The current study seeks to advance the use of social identity in health communication materials and builds on work examining targeted campaigns by evaluating the efficacy of social identity targeting. Targeting campaigns by social identity deserves consideration, given the evidence that identity plays an important role in many health behaviors. Relevant to the current study is strong evidence indicating that the extent of an adolescent's social identity as a member of a peer group (peer group identification) impacts his or her smoking behavior (Sussman et al., 2007). However, limited research explores the utility of this construct in health communication materials. Comello (2013) offers a mechanism through which peer group identification could exert an effect on the relationship between exposure to

health communication materials and corresponding health behavior. In particular, Comello's (2013) moderational hypothesis proposes that members of a peer group are more responsive to an ad targeting that group. Because social identity is linked to media use, style preferences, hobbies and values as well as health behavior, targeting individuals by social identity may enable campaign developers and researchers to maximize the efficiency of their efforts by developing messages that resonate with a particular group and placing those messages in media and contexts most likely to be frequented by members of those groups. Thus, the goal of the current study is to isolate and test the efficacy of social identity targeting in anti-smoking ads. Specifically, we examine the extent to which adolescents agree with anti-smoking beliefs presented in an ad that either does or does not target an adolescent's peer group. We focus on beliefs based on research indicating that anti-smoking beliefs are important factors underlying an adolescent's smoking behavior (Niederdeppe, Farrelly & Haviland, 2004). We hypothesize:

H1: The level of identification with the peer group targeted by an ad presenting two anti-smoking beliefs will be positively associated with strength of subsequent anti-smoking beliefs.

## Methods

To test our hypothesis, we conducted an experiment whereby participants were shown an anti-smoking ad containing two key anti-smoking beliefs. Participants were randomly shown either an ad targeting the peer group with which they identified, or an ad targeting a different peer group. One week later, participants took a follow-up survey measuring the strength of the two key anti-smoking beliefs presented in the ad.

## Sampling procedure

In 2011, an online survey of adolescents ages 13 to 15 years old was conducted. The study sample was obtained using a recruitment firm (Qualtrics) that specializes in recruitment for online surveys. Using a randomized selection design (blocked by gender), youths were selected in waves using a computer program designed to generate a random sample from a panel of adolescents maintained by Qualtrics. This panel contains approximately 70,000 adolescents aged 12–15 and is similar to the United States in terms of sociodemographic composition (i.e. race, ethnicity, income and education level). Panelists were recruited through an e-mail received from the recruitment firm informing them about the study. Those who were interested in participating could click a link directing them to the survey homepage, where they read an information sheet, approved by the researchers' university Institutional Review Board, and checked a box agreeing to consent before being taken to the actual survey. Parents consented for their children to participate in any surveys distributed by the recruitment firm. The researchers' university Institutional Review Board considered this study low-risk and granted approval for the study protocol. Once the quota of 500 surveys was reached, recruitment stopped, although those who had already received the recruitment e-mail could still take the survey. Ultimately, this procedure elicited 534 complete response sets. One week later, participants were re-contacted to complete a follow-up survey. Our goal was 250 completes for follow-up, to provide adequate statistical power

( $1-\beta > .8$ ). Because the survey was left open for a short period time after the 250<sup>th</sup> participant, a total of 251 participants completed a follow-up survey.

## Participants

Approximately half the sample were male (51.0%). About one-third (31.4%) of the sample were thirteen years-old, one-third (32.8%) were fourteen years-old and one-third were fifteen years-old (32.7). The majority of the sample was non-Hispanic white (67.3%), 11.4% were African American, 11.4% were Hispanic/Latino, 4.7% were Asian, .9% were American Indian/Alaskan Native, .5% were Native Hawaiian/Other Pacific Islander, 4% were Middle Eastern and 3.3% of the sample indicated they were another ethnicity. This category included individuals who identified as two or more ethnicities. All descriptive statistics presented are unweighted.

## Procedure

To test the hypothesis that the level of identification with the peer group targeted by an ad presenting two anti-smoking beliefs will be positively associated with strength of subsequent anti-smoking beliefs, we conducted an experiment. Participants were asked to indicate which peer group they most identified with and were then randomly assigned to view either a print ad targeting that peer group, or a print ad targeting another, non-reference group.

**Creation of experimental stimuli**—A separate survey of 250 adolescents aged 12–15 was conducted in 2010. This survey asked participants to write in up to fifteen of the peer groups they and others at their school belonged to. The researchers developed a coding scheme, and responses were coded by two research assistants (under the guidance of this study's authors). This protocol resulted in 11 unique peer groups: Academics, Average, Deviants, Elites (including jocks/athletes, preppies, and populars), Emo/Goth, Goody-goodies, Hip-hop, Musicians, Outcasts, Rockers and Skaters.

Participants in the 2010 survey also were asked to provide information about the style, hobbies and values of the peer groups they wrote in. The lead author and two research assistants examined this information for patterns by peer group. Of these 11 groups, 8 had clearly defined profiles (i.e. consistent and unique fashion and activity preferences) (see Table 1), while three - the Average, Goody-goody and Outcasts - did not have clearly defined and consistent profiles<sup>1</sup>. Thus, it was difficult to target these groups through a print ad; as such, ads were not created for these groups. We worked with a graphic designer to use this information to create eight ads, each one targeting one peer group.

The ads were based off of a truth® campaign print ad which was selected due to evidence supporting the campaign's effectiveness (e.g. Cowell, Farrelly, Chou & Vallone, 2009; Farrelly et al., 2002; Farrelly, Davis, Duke & Messeri, 2009; Farrelly, Davis, Haviland,

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<sup>1</sup>For example, participants noted that the style of these groups was "normal everyday clothes," "average clothes" "regular" and "whatever they want." Music choices varied extensively within group, from "Christian," "pop," "heavy metal," "scremo," "rap," "a variety" and "a little of everything" and "anything and everything." There was also similar variance in terms of preferred activities, ranging from "go to dances, kick it at each others house, go to the parks," "play video games, go to movies, roller skating, amusement parks" "sports and doing things that are fun, but we also like quite time like reading" "get together at church...play video games...get together at each others homes," "hang out, see movies, talk on phone," and "use the internet, swim, go to six flags."

Messeri & Heaton, 2005; Farrelly, Nonnemaker, Davis & Hussin, 2009). To target each peer group, each ad contained two individuals (one male, one female) who represented each group (signaled by their style of dress and objects indicating preferred activities, such as a skateboard). Each ad contained two key anti-smoking beliefs, which were selected from the truth® campaign's website (<http://sunnyside.thetruth.com/facts/facts.cfm>). These beliefs were “Tobacco company executives have called younger adult smokers ‘replacement smokers’” and “Tobacco company executives have tried targeting potential smokers in school bathrooms, playgrounds, YMCAs and city parks.” For clarity, we will refer to these beliefs as, correspondingly, the “replacement smokers” belief and the “targeting” belief. The ads were identical save for the peer group being targeted (see Figure 1).

**Assignment of participants to conditions**—Participants in the experiment first indicated with which of the 11 groups they most identified. They were then randomly assigned to view either the ad targeting that group, or an ad targeting another group.

**Post-test**—The post-test to measure occurred one week after participants’ viewed the ad. A one-week time frame was decided on to reduce social desirability bias that could occur in a post-test immediately following exposure to the ad, while still being close enough in time to the pre-test to mitigate against participant drop-out.

## Measures

**Identification with peer group being targeted**—To measure the extent to which respondents identified with the peer group targeted by the ad they viewed, we used a measure based on previous work of Sussman and colleagues (Moran, Murphy & Sussman, 2012; Sussman et al., 1999; Sussman et al., 2000; Sussman, Unger & Dent, 2004). This measure is designed to comprehensively assess the extent to which an adolescent identifies with various peer groups. Respondents were presented with the eleven peer groups identified in pre-testing, and were then asked to indicate the extent to which they identified (on a scale from 0 to 100) with each group. For this measure, participants dragged a bar across the screen for each social group category, which allowed them to adjust and compare across categories, and make changes accordingly. Specifically, individuals were asked the following: “People often hang out in different groups at school. For example, a lot of schools have a group of ‘jocks.’ Some students gave the following list of groups. Please indicate how much you identify with each group by dragging the bar across the screen. Dragging the bar to 100 means you identify with this group very much and dragging the bar to 0 means you do not identify with this group at all.” This measure was chosen because it allows individuals to identify with more than one group and to indicate varying levels of identification.

**Anti-smoking beliefs**—Our two outcome variables represented the strength of participants’ “replacement smokers” belief and “targeting” belief (as corresponding to the two key beliefs presented in the ad). To assess these beliefs, participants were asked in the post-test to indicate the extent to which they agreed or disagreed with each of the two following statements: “Tobacco company executives have called younger adult smokers ‘replacement smokers’” and “Tobacco company executives have tried targeting potential

smokers in school bathrooms, playgrounds, YMCAs and city parks.” This was measured on a scale from 0 (strongly disagree) to 10 (strongly agree). For the purposes of isolating and evaluating the efficacy of peer group targeted appeals, we chose to focus exclusively on ad-congruent beliefs for several reasons. Primarily, the two beliefs contained in the ad were not actively being promoted by other anti-smoking campaigns. Therefore it is unlikely that participants would be exposed to these beliefs outside of the experiment, whereas participants may have been exposed to more general anti-smoking messages in the week between the pre- and post-test. Thus, focusing solely on ad-congruent beliefs as our outcome of interest strengthens the internal validity of the study, increasing the confidence with which we can attribute any post-test effect to the experimental intervention. Additionally, evidence indicates that beliefs are important factors underlying smoking behavior (Niederdeppe et al., 2004) and as such, a change in beliefs can be an important precursor to a change in behavior. Because the beliefs were unique, we measured them in the post-test only so as not to introduce any demand characteristic effect or prime the participants to be more accepting of the beliefs presented in the ad.

**Attitude toward the ad**—All participants were asked to report their attitudes toward the ad immediately after viewing it by indicating on a scale from 1 to 10 how much they agreed with statements such as “The ad was boring to me” and “This ad would convince people like me not to smoke.” After reverse coding the appropriate items, the items were averaged to create a scale representing attitudes toward the ad. Higher scores indicate a more positive attitude. This was done so that we could compare those who did and did not complete the post-test and ensure that no significant differences existed on this criterion. Perceived persuasiveness and appraisals of ads are low to moderately correlated with actual effectiveness (Dillard, Weber & Vail, 2007), so because we had the ability to measure beliefs as a function of the ad, we opted to use this construct only as a means of assessing acceptability of the ad by ensuring that attitude toward the ad did not vary across those who did and did not complete the post-test.

**Covariates**—Control variables were selected to attempt to isolate the unique effect of identification with the peer group targeted by the ad and subsequent strength of anti-smoking beliefs; thus, we selected covariates known to be associated with cigarette use and that could potentially alter the way an individual responded to the ad. Included in the analysis were age (in years), gender (0 = female, 1 = male), ethnicity (African American, Latino), lifetime number of cigarettes smoked (on a scale from 0 to 7, where 1 = never smoked and 7 = 100 or more cigarettes/5 or more packs) and whether or not the respondent lived with a smoker (0 = no, 1 = yes). Additionally, a covariate indicating whether the participant identified with a group traditionally at risk for smoking (0 = no, 1 = yes) was also included. This is because random assignment occurred within each peer group – there was no sample-wide randomization. Thus, certain ads (those targeting the peer groups with the largest numbers) were more likely to be viewed by members of certain groups. For example, half of the participants who identified as Academics were randomly assigned to view the ad targeting Academics, while the other half were randomly assigned to view one of the other seven ads. Because different peer groups have different risk profiles, this introduces a potential confound into the experimental design, potentially obscuring any relationship



between identification with the group in the ad and subsequent beliefs. At risk groups were identified using data from the 2010 survey (based on logistic regression analyses, at risk groups were identified as having statistically significant ( $p < .05$ ) ORs  $>1$  for ever having tried smoking) and cross-referenced against those at risk groups identified in Sussman and colleagues (2007). These groups were deviant, hip-hop, rockers and emo/goth.

### Preliminary analyses

#### **Differences between individuals who did and did not complete the post-test—**

A t-test and chi-square test were used to examine differences between those who did and did not complete the follow-up survey; no significant differences along key variables (peer group identification, cigarette use, age, gender, living with a smoker) were detected (all  $ps > .05$ ). Additionally, a t-test revealed no significant difference ( $p > .05$ ) between those who did and did not complete the one-week post-test on their attitudes toward the ad.

**Experimental stimuli manipulation check—**To ensure that each ad effectively targeted the intended peer group, the ads were then tested with a sample of 60 college students. These students were given images of each ad and were told they each represented a peer group or subculture. The students were then asked to indicate the name of the group they felt each ad represented. All of the ads were associated with the correct crowd over 90% of the time across all 60 students, indicating that they effectively represented the intended peer group.

**Differences in baseline efficacy of ads—**Although the ads were identical in every way except for the peer group being targeted by the ad, we wanted to ensure that no ad was inherently more or less efficacious than another. To do this, a one-way ANOVA was run to test whether any of the ads differed in their baseline efficacy. No significant differences between ads were found for either the belief that “Tobacco company executives have called younger adult smokers ‘replacement smokers’” ( $F(7,243) = .951, p = .468$ ) nor the belief that “Tobacco companies have tried targeting potential smokers in school bathrooms, playgrounds, YMCAs and city parks” ( $F = .889(7, 243), p = .515$ ).

### Analysis

Two individual multiple regression analyses were used to examine the extent to which the level of identification with the peer group targeted by an ad presenting two anti-smoking beliefs will be positively associated with strength of subsequent anti-smoking beliefs. The two beliefs of interest were that “Tobacco company executives have called younger adult smokers ‘replacement smokers’” and “Tobacco company executives have tried targeting potential smokers in school bathrooms, playgrounds, YMCAs and city parks.” The independent variable of interest was the level of identification with the peer group targeted by the ad. Covariates entered were gender, age, whether the respondent identified with a high risk group, lifetime cigarettes smoked and whether the respondent lives with a smoker. Table 2 presents descriptive statistics for all variables included in the model.

## Results

Results of the statistical analysis indicated that identification with the group targeted by the ad viewed was positively associated with strength of one of the ad's two key beliefs ("Tobacco company executives have called younger adult smokers 'replacement smokers'"). This relationship was statistically significant ( $p = .004$ ). The relationship between identification with the group targeted by the ad and the second key belief ("Tobacco company executives have tried targeting potential smokers in school bathrooms, playgrounds, YMCAs and city parks") was of marginal statistical significance ( $p = .07$ ). Table 3 presents regression coefficients for each model.

## Discussion and Implications

This study explored whether targeting an adolescent's specific peer group is a useful strategy for anti-smoking campaigns. To do so, we conducted an experiment where adolescents were shown an ad that either targeted the group with which they most identified, or targeted an opposing group. Results of this study indicate that the strategy is potentially useful. Specifically, we found that as participants identified more with the group targeted by the ad, they subsequently had stronger levels of one key anti-smoking belief presented by the ad. While identification with the group targeted by the ad also had a positive relationship with strength of the second anti-smoking belief presented by the ad among youth in our sample, this relationship was of only marginal statistical significance.

There are several possible reasons why the relationship between peer group identification and anti-smoking beliefs was statistically significant at  $p < .05$  for only the "replacement smokers" belief. First, it is possible that a ceiling effect could have occurred. Because we did not measure beliefs in the pre-test, we cannot state for sure; however, the one-week post-test indicated that the "targeting" belief had a higher mean and lower standard deviation than the "replacement smokers" belief ( $M = 6.873$ ,  $SD = 2.781$  vs.  $M = 5.813$ ,  $SD = 3.03$ ). It is possible that the "replacement smokers" belief is more believable and thus more susceptible to influence via the experiment, while the "targeting" belief, is less malleable. Finally, there could have been a possibility that our analysis was underpowered, as our sample contained only 251 participants; however, power analysis indicated that we had sufficient power (96.3%) to detect an observed  $R^2$  of .1.

Given the exploratory nature of our study, these findings indicate that peer group targeted anti-smoking ads are more efficacious than non-peer group targeted ads at producing anti-smoking beliefs, and that social identity targeting may be a useful strategy for anti-smoking campaigns. These findings support Comello's (2013) argument that social identity has the ability to moderate the effectiveness of health communication materials. There are at least two possible explanations for why social identity played this role in our study. First, social identity targeting may increase the perceived relevance of an ad and as such, an individual may be more likely to attend to the ad's message. To explore this, future research should examine whether individuals who do and do not identify with a group featured in an ad vary on measures of attention. Second, because an adolescent's identification with a particular group is not necessarily based upon face-to-face contact with other youth who identify with

that group, media have increased potential to shape group norms. As such, an anti-smoking message that targets a particular group contains an explicit and implicit message – the explicit message being the specific anti-smoking beliefs presented, and the implicit message being that members of the targeted group support those messages and that smoking is not a norm for these groups.

Although we believe these findings offer support for social identity targeting as a useful strategy for health communication materials, several limitations of this study must be noted. First, the online modality of the survey may have skewed our sample in favor of youth who have internet access at home. However, because the large majority of teenagers have internet access (Lenhart, Arafeh, Smith & Macgil, 2008) and because this survey dealt with sensitive topics that participants might feel more comfortable answering privately and anonymously, we believed that an online survey was appropriate. Second, although we believe our sample's geographical diversity increases the validity of our findings, it is possible that we overlooked certain geographically specific peer groups (e.g. surfers among youth in coastal locations). Additionally, the current study sought to demonstrate the basic efficacy of targeting youth based on their social identity and as such, focused only on two proximal outcomes (anti-smoking beliefs presented in the ad). Ad-congruent anti-smoking beliefs were investigated as the sole outcomes in this study in order to increase the confidence with which any post-test effect can be attributed to the experiment, which we believe is appropriate for a study evaluating the basic efficacy of an intervention. However, future research should investigate the viability of this approach for changing attitudes, perceived norms, behavioral intentions and ultimately behavior. In particular, our study examined post-test beliefs only to avoid introducing a demand characteristic, which we found appropriate given the randomized design of the experiment. To account for the lack of pre-test measures, we included "proxy pretest" measures (lifetime cigarettes smoked; identification with an at risk group) in the analysis, as recommended by Shadish, Cook and Campbell (2002, p. 118). Future work should consider a Solomon four group design which enables the researcher to implement a repeated measures design to assess the magnitude of change while accounting for any bias introduced by the pre-test. Work examining variations in attitude toward the ad, liking of the ad and perceived persuasiveness of the ad would also be useful and enable researchers to further understand the mechanisms through which social identity targeted messages operate. Additionally, future research should examine the effectiveness of this approach in real world settings.

Future research should also examine the intersection between social identity as a member of a peer group and social identity as a smoker. Research indicates that smokers develop an identity as a smoker and that this identity is negatively related to motivations to quit and is positively related to resistance to anti-smoking messages (Falomir & Invernizzi, 1999; Invernizzi, Falomir-Pichastor, Muntoz-Rojas and Mugny, 2003; van den Putte, Yzer, Willemsen and de Bruijn, 2009). Although this line of inquiry may be more relevant to established smokers than to adolescents (the majority of whom either do not smoke or are not fully established smokers), it nonetheless bears important implications for the study of identity and health communication messages.

Finally, the landscape of tobacco products is changing in the U.S. and involves an increase in alternative tobacco products, including smokeless tobacco products (such as dissolvable tobacco products and snus: Southwell et al., 2012, and e-cigarettes: Pokhrel, Fagan, Little, Kawamoto & Herzog, 2013). Based on what we have found in general with smokeless tobacco (e.g. Sussman et al., 1994), we expect that at-risk youth are most likely to use newer tobacco products. However, these products can be used discreetly (Southwell et al., 2012) and as such, may not have the capacity to signal one's identity the way that a cigarette can. Alternately, the discreet nature of these products may increase their social acceptability (Southwell et al., 2012). Additionally, given the tobacco industry's long history of using lifestyle targeting to reach youth (Hendlin, Anderson & Glantz, 2010; Ling & Glantz, 2002a; Ling & Glantz, 2002b), it is possible that attempts to market these products may succeed in promoting these products as symbols of specific peer groups, subcultures or lifestyles. Thus, future research is needed to determine the extent to which peer group identification is associated with use of alternative tobacco products, and what role tobacco industry marketing might play.

The results of this study support the argument that targeting individuals based on their social identity is a viable strategy for those seeking to change or promote health behaviors that have been linked to social identity. Although this study focused on anti-smoking messages, social identity has been linked to a variety of health behaviors and should be explored in those areas. While prior research (Comello, 2013; Moran et al., 2012) has made the case that social identity targeting can increase the effectiveness of health messages, this study is the first to our knowledge that specifically demonstrates the efficacy of this approach in an experimental setting. Together, this body of evidence points to social identity targeting as an effective new tool that should be considered by those seeking to develop health communication messages.

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## References

- Berger J, Rand L. Shifting signals to help health: Using identity signaling to reduce risky health behaviors. *Journal of Consumer Research*. 2008; 35(3):509–518.
- Centers for Disease Control. Tobacco use: Targeting the nation's leading cause of death. 2011. Retrieved December 10, 2012 from [http://www.cdc.gov/chronicdisease/resources/publications/aag/pdf/2011/Tobacco\\_page2\\_insert\\_508.pdf](http://www.cdc.gov/chronicdisease/resources/publications/aag/pdf/2011/Tobacco_page2_insert_508.pdf)
- Comello, MA. Conceptualizing the intervening roles of identity in communication effects: The prism model. In: Lasorsa, D.; Rodriguez, A., editors. *Identity and communication: New agendas in communication*. New York: Routledge;
- Comello MLG, Slater MD. The effects of drug-prevention messages on the accessibility of identity-related constructs. *Journal of Health Communication*. 2011; 16:458–469. [PubMed: 21271426]
- Cowell AJ, Farrelly MC, Chou R, Vallone DM. Assessing the impact of the national "truth" antismoking campaign on beliefs, attitudes, and intent to smoke by race/ethnicity. *Ethnicity and Health*. 2009; 14(1):75–91. [PubMed: 19152160]

- Dillard JP, Weber KM, Vail RG. The relationship between the perceived and actual effectiveness of persuasive messages: A meta-analysis with implications for formative campaign research. *Journal of Communication*. 2007; 57(4):613–631.
- Dolcini MM, Adler NE. Perceived competencies, peer group affiliation, and risk behavior among early adolescents. *Health Psychology*. 1994; 13:496–506. [PubMed: 7889904]
- Evans WD, Price S, Blahut S. Evaluating the truth® Brand. *Journal of Health Communication*. 2005; 10(2):181–192. [PubMed: 15804907]
- Evans WD, Wasserman J, Bertolotti E, Martino S. Branding behavior: the strategy behind the truth campaign. *Social Marketing Quarterly*. 2002; 8:17–29.
- Falomir JM, Invernizzi F. The role of social influence and smoker identity in resistance to smoking cessation. *Swiss Journal of Psychology*. 1999; 58(2):73–84.
- Farrelly MC, Davis KC, Duke J, Messeri P. Sustaining ‘truth’: Changes in youth tobacco attitudes and smoking intentions after 3 years of a national antismoking campaign. *Health Education Research*. 2009; 24(1):42–48. [PubMed: 18203679]
- Farrelly MC, Davis KC, Haviland ML, Messeri P, Heaton CG. Evidence of a dose-response relationship between “truth” antismoking ads and youth smoking prevalence. *American Journal of Public Health*. 2005; 95:425–431. [PubMed: 15727971]
- Farrelly MC, Heaton CG, Davis KC, Messeri P, Hersey JC, Haviland CG. Getting to the truth: Evaluating national tobacco countermarketing campaigns. *American Journal of Public Health*. 2002; 92:901–907. [PubMed: 12036775]
- Farrelly MC, Niederdeppe J, Yarsevich J. Youth tobacco prevention mass media campaigns: Past, present, and future directions. *Tobacco Control*. 2003; 12(suppl 1)
- Farrelly MC, Nonnemaker J, Davis KC, Hussin A. The influence of the national truth® campaign on smoking initiation. *American Journal of Preventive Medicine*. 2009; 36:379–384. [PubMed: 19211213]
- Flynn BS, Worden JK, Secker-Walker RH, Pirie PL, Badger GJ, Carpenter JH. Long-term responses of higher and lower risk youths to smoking prevention interventions. *Preventive Medicine*. 1997; 26:389–394. [PubMed: 9144764]
- Haslam SA, Jetten J, Postmes T, Haslam C. Social identity, health and well-being: An emerging agenda for applied psychology. *Applied Psychology*. 2009; 58(1):1–23.
- Hendlin Y, Anderson SJ, Glantz SA. ‘Acceptable rebellion’: marketing hipster aesthetics to sell Camel cigarettes in the US. *Tobacco control*. 2010; 19(3):213–222. [PubMed: 20501494]
- Hogg, MA.; Abrams, D., editors. *Social identity and social cognition*. London: Blackwell; 1999.
- Invernizzi F, Falomir-Pichastor JM, Muntoz-Rojas D, Mugny G. Social influence in personally relevant contexts: the respect attributed to the source as a factor increasing smokers’ intention to quit smoking. *Journal of Applied Social Psychology*. 2003; 33(9):1818–1836.
- Johnston, LD.; O'Malley, PM.; Bachman, JG.; Schulenberg, JE. "Decline in teen smoking resumes in 2011." *Ann Arbor, MI: University of Michigan News Service*; Dec 14. 2011 Retrieved December 10, 2012 from <http://www.monitoringthefuture.org>
- La Greca AM, Prinstein MJ, Fetter MD. Adolescent peer crowd affiliation: Linkages with health-risk behaviors and close friendships. *Journal of Pediatric Psychology*. 2001; 26(3):131–143. [PubMed: 11259515]
- Lenhart, A.; Arafteh, S.; Smith, A.; Macgil, A. *Writing, Technology and Teens*. Pew Internet and American Life Project. 2008. Available at [pewinternet.org](http://pewinternet.org)
- Ling PM, Glantz SA. Using tobacco-industry marketing research to design more effective tobacco-control campaigns. *JAMA: the journal of the American Medical Association*. 2002a; 287(22): 2983–2989. [PubMed: 12052128]
- Ling PM, Glantz SA. Why and how the tobacco industry sells cigarettes to young adults: evidence from industry documents. *American Journal of Public Health*. 2002b; 92(6):908–916. [PubMed: 12036776]
- Ling, P.; Lee, Y.; Jordan, J.; Neilands, T.; Glantz, S. Social branding to decrease smoking among young adult hipsters in California; Sacramento, CA. Poster presented at Linking Tobacco Control Research & Practice for a Healthier California (joint conference of California Tobacco Control Program and Tobacco-Related Disease Research Program; Apr 2012. 2012

- Michell L. Loud, sad or bad: Young people's perceptions of peer groups and smoking. *Health Education Research, Theory & Practice*. 1997; 12(1):1–14.
- Moran, MB. The media's role in adolescent social identity. In: Lasorsa, D.; Rodriguez, A., editors. *Identity and communication: New agendas in communication*. New York: Routledge; 2013.
- Moran MB, Murphy S, Sussman S. Campaigns and cliques: Variations in effectiveness of an anti-smoking campaign as a function of adolescent peer group identity. *Journal of Health Communication*. 2012; 17:1215–1230. [PubMed: 23066900]
- Mosbach P, Leventhal H. Peer group identification and smoking: Implications for intervention. *Journal of Abnormal Psychology*. 1988; 97:238–245. [PubMed: 3385077]
- Niederdeppe J, Farrelly MC, Haviland L. Confirming “truth”: More evidence of a successful tobacco countermarketing campaign in Florida. *American Journal of Public Health*. 2004; 94:255–257. [PubMed: 14759936]
- Newman BM, Newman PR. Group identity and alienation: Giving the we its due. *Journal of Youth and Adolescence*. 2001; 30:515–538.
- Palmgreen P, Donohew L, Lorch EP, Hoyle RH, Stephenson MT. Television campaigns and adolescent marijuana use: tests of sensation seeking targeting. *American Journal of Public Health*. 2001; 91(2):292–296. [PubMed: 11211642]
- Pokhrel P, Fagan P, Little MA, Kawamoto CT, Herzog TA. Smokers who try e-cigarettes to quit smoking: Findings from a multiethnic study in Hawaii. *American Journal of Public Health*. 2013 E-view ahead of print.
- Shadish, WR.; Cook, TD.; Campbell, DT. *Experimental and quasi-experimental designs for generalized causal inference*. Boston: Houghton Mifflin Company; 2002.
- Slater MD. Reinforcing spirals: the mutual influence of media selectivity and media effects and their impact on individual behavior and social identity. *Communication, Theory*. 2007; 17:281–303.
- Southwell BG, Kim AE, Tessman GK, MacMonegle AJ, Choiniere CJ, Evans SE, Johnson RD. The marketing of dissolvable tobacco: Social science and public policy research needs. *American Journal of Health Promotion*. 2012; 26(6):331–332. [PubMed: 22747313]
- Stephenson M, Palmgreen P. Sensation seeking, perceived message sensation value, personal involvement, and processing of anti-marijuana PSAs. *Communication Monographs*. 2001; 68(1): 49–71.
- Substance Abuse and Mental Health Services Administration. Calculated based on data in 2006 National Household Survey on Drug Use and Health. 2006. Retrieved December 10, 2012 from <http://www.oas.samhsa.gov/nsduh.htm>
- Sussman S, Dent CW, McAdams LA, Stacy AW, Burton D, Flay BR. Group self-identification and adolescent cigarette smoking: A 1-year prospective study. *Journal of Abnormal Psychology*. 1994; 103:576–580. [PubMed: 7930058]
- Sussman S, Dent CW, Simon TR, Stacy AW, Burton D, Flay BR. Identification of which high-risk youth smoke cigarettes regularly. *Health Values*. 1993; 17:42–53.
- Sussman S, Dent CW, Stacy AW, Burciaga C, Raynor A, Turner GE, et al. Peer group association and adolescent tobacco use. *Journal of Abnormal Psychology*. 1990; 99:349–352. [PubMed: 2266208]
- Sussman, S.; Moran, MB.; Pokhrel, P. Group identification. *Encyclopedia of Adolescence*. Levesque, RJR., editor. New York: Springer; 2012.
- Sussman S, Pokhrel P, Ashmore RD, Brown BB. Adolescent peer group identification and characteristics: A review of the literature. *Addictive Behaviors*. 2007; 32:1602–1627. [PubMed: 17188815]
- Sussman S, Simon TR, Stacy AW, Dent CW, Ritt A, Kipke MD, et al. The Association of group self-identification and adolescent drug use in three samples varying in risk. *Journal of Applied Social Psychology*. 1999; 29:1555–1581.
- Sussman S, Unger J, Dent W. Peer group self-identification among alternative high school youth: A predictor of their psychosocial functioning five years later. *International Journal of Clinical and Health Psychology*. 2004; 4(1):9–25.
- Tajfel, H. Social categorization. English manuscript of “La categorisation sociale.”. In: Moscovici, S., editor. *Introduction à la psychologie sociale*. Vol. Vol. 1. Paris: Larousse; 1972. p. 272–302.

- Tajfel, H. Social categorization, social identity, and social comparisons. In: Tajfel, H., editor. *Differentiation between social groups*. London: Academic Press; 1978.
- Tajfel, H.; Turner, JC. An integrative theory of intergroup conflict. In: Austin, WG.; Worchel, S., editors. *The social psychology of intergroup relations*. Pacific Grove, CA: Brooks/Cole; 1979. p. 33-147.
- Turner, J. Some current issues in research on social identity and self-categorization theories. In: Ellemers, N.; Spears, R.; Doosje, B., editors. *Social identity: Context, commitment, content*. Oxford: Blackwell Publishers; 1999. p. 6-34.
- Urberg KA, Degirmencioglu SM, Tolson JM, Halliday-Scher K. Adolescent social crowds: Measurement and relationship to friendships. *Journal of Adolescent, Research*. 2000; 15:427–445.
- van den Putte B, Yzer M, Willemsen MC, de Bruijn GJ. The effects of smoking self-identity and quitting self-identity on attempts to quit smoking. *Health Psychology*. 2009; 28(5):535. [PubMed: 19751079]
- U.S. Department of Health and Human Services. *Preventing Tobacco Use Among Youth and Young Adults: A Report of the Surgeon General*. Atlanta, GA: 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; 2012.
- U.S. Surgeon General's Office. *The Health Consequences of Smoking: A Report of the Surgeon General*. 2004. Retrieved December 10, 2012 from <http://www.surgeongeneral.gov/library/reports/smokingconsequences/index.html>



Deviant



Elite



Emo



Hip-hop



Skater



Rocker



Musician



Academic

Figure 1. Experimental stimuli.



**Table 1**

## Peer group profiles

Peer group	Prototypical characteristics
Academics	Wears "regular," "normal" clothing. Spends time studying/doing homework or other school-related clubs and activities.
Deviants	Wears skinny jeans, skimpy tops for girls, baggy clothes for boys. Spends time "going out," having fun, engaging in illegal activities (shoplifting, vandalism).
Elites	Wears cool, name brand clothing (Abercrombie, Hollister). Likes to play sports, party, go to the mall, go to movies.
Emo/goth	Wears dark clothing, band t-shirts, eyeliner. Has piercings, dyed hair. Spends time listening to emo and goth music.
Hip-hop	Wears baggy pants, t-shirts. Likes to "hang out," dance, listen to music.
Musician	Wears "regular," "normal" clothing. Participates in school band or orchestra.
Rockers	Wears jeans, band t-shirts, "grungy clothes." Likes to listen to music, play instruments (guitar), go to concerts.
Skaters	Wears shorts, t-shirts, skate brands (Volcom, DC, Element). Spends time skateboarding/hanging out at the skateboard park.

**Table 2**

## Sample Descriptive Statistics

	%	N
Female	51.40	129
Identifies with high risk group	17.50	44
Lives with a smoker	42.20	106
	M	SD
Age	13.900	0.873
Lifetime cigarettes smoked (from 0 to 7)	0.650	1.506
Level of identification with group in ad (from 1 to 100)	31.733	33.347
Tobacco company executives have called younger adult smokers "replacement smokers." (from 1 to 10) <sup>(d)</sup>	6.873	2.781
Tobacco company executives have tried targeting potential smokers in school bathrooms, playgrounds, YMCAs and city parks. (from 1 to 10) <sup>(d)</sup>	5.813	3.033

<sup>a</sup>Pre-test scores; higher scores indicate more agreement with statement.

**Table 3**  
 Regression coefficients for model predicting smoking-related beliefs including race as a covariate<sup>(a)</sup>

	Tobacco company executives have called younger adult smokers 'replacement smokers'.		Tobacco company executives have tried targeting potential smokers in school bathrooms, playgrounds, YMCAs and city parks.					
	B	SE	$\beta$	sig.	B	SE	$\beta$	sig.
Identification with group in ad	.016	.005	.186	.004	.011	.006	.118	.070
Gender (male)	-.130	.354	-.023	.713	.142	.392	.023	.716
Age	.107	.219	.032	.624	.416	.242	.112	.087
Identification with high risk group	-.599	.472	-.082	.206	-.018	.522	-.002	.972
Lifetime cigarettes smoked	-.178	.122	-.096	.147	-.094	.135	-.046	-.693
Lives with smoker	-.079	.364	-.014	.829	-.115	.402	-.019	.776
African American	-.594	.562	-.067	.291	-.224	.621	-.023	.718
Latino	-.018	.543	-.002	.973	.168	.601	.018	.780

<sup>a</sup> N = 251