

Published in final edited form as:

Soc Mar Q. 2010 December ; 16(4): 41–69. doi:10.1080/15245004.2010.522768.

Using Market Research to Characterize College Students and Identify Potential Targets for Influencing Health Behaviors

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Abstract

Marketing campaigns, such as those developed by the tobacco industry, are based on market research, which defines segments of a population by assessing psychographic characteristics (i.e., attitudes, interests). This study uses a similar approach to define market segments of college

smokers, to examine differences in their health behaviors (smoking, drinking, binge drinking, exercise, diet), and to determine the validity of these segments. A total of 2,265 undergraduate students aged 18–25 years completed a 108-item online survey in fall 2008 assessing demographic, psychographic (i.e., attitudes, interests), and health-related variables. Among the 753 students reporting past 30-day smoking, cluster analysis was conducted using 21 psychographic questions and identified three market segments – Stoic Individualists, Responsible Traditionalists, and Thrill-Seeking Socializers. We found that segment membership was related to frequency of alcohol use, binge drinking, and limiting dietary fat. We then developed three messages targeting each segment and conducted message testing to validate the segments on a subset of 73 smokers representing each segment in spring 2009. As hypothesized, each segment indicated greater relevance and salience for their respective message. These findings indicate that identifying qualitatively different subgroups of young adults through market research may inform the development of engaging interventions and health campaigns targeting college students.

Introduction

Over 18 million students are enrolled in colleges and universities in the United States, and the majority of students are between the ages of 18 and 25 (Snyder, Dillow, & Hoffman, 2008). This is a sensitive time period for engaging in many health compromising behaviors, including drinking (O'Malley & Johnston, 2002; Wechsler et al., 2002), smoking (Rigotti, Lee, & Wechsler, 2000; Substance Abuse and Mental Health Services Administration, 2006), low physical activity (Huang et al., 2003), and poor dietary habits (American College Health Association [ACHA], 2009; Anding, Suminiski, & Boss, 2001; Dinger & Waigandt, 1997; Evans, Sawyer-Morse, & Betsinger, 2000; Grace, 1997; Hiza & Gerrior, 2002; Melby, Femea, & Sciacca, 1986). According to the 2008 National College Health Assessment, 30% of college students reported drinking more than 5 of the past 30 days, 38% reported consuming 5 or more drinks the last time they “partied”; 17% reported smoking cigarettes in the past 30 days, with 5% smoking every day; only 44% engaged exercise at least 3 days in the past week; and only 9% reported consuming at least 5 servings of fruits and vegetables daily (ACHA, 2009). Thus, promoting healthy behaviors during this time is crucial to helping individuals avoid many preventable health problems (Doll, Peto, Boreham, & Sutherland, 2004; Orleans, 2007).

It is well established that the tobacco industry designs marketing campaigns targeting specific groups, particularly young adults. Since 1998, over 50 million pages of previously secret tobacco industry documents have been made available to the public. In addition to numerous other scientific and policy questions, analyses of these documents have demonstrated how and why tobacco industry marketing targeted youths (Hastings & MacFadyen, 2000; Perry, 1999; Pollay, 2000). Cigarette advertisements also encouraged increased smoking and establishment of regular smoking by integrating smoking into various situations in young adulthood, such as leaving home, going to college, or beginning careers (Ling & Glantz, 2002b). Tobacco marketers commonly identify market segments defined by “psychographic” characteristics (Philip Morris USA, 1994, 1996; YAS Segmentation Study [Philip Morris Tobacco Company website], 1993), including future aspirations, activities, social groups, general attitudes, personality characteristics, and self-

descriptors which are used to profile a given target market (Ling & Glantz, 2002a). By identifying important psychographics among young adults, the tobacco industry designs messages unique to characteristic subgroups and targets these groups through marketing campaigns. These strategies have been quite successful in influencing young adult smoking. Public health campaigns might also use this type of approach to inform their interventions.

Tailoring messages based on various psychosocial characteristics has been shown to enhance the processing of messages including health promotion messages (Kreuter, Strecher, & Glassman, 1999). The theoretical basis for tailoring is drawn from the Elaboration Likelihood Model (Petty & Cacioppo, 1981), which suggests that individuals engage in two types of processing messages: central and peripheral route processing. Central route processing occurs with careful examination of message content, typically occurs when messages contain personally relevant information, and results in more stable attitudinal and behavioral change.

On the other hand, peripheral route processing relies on heuristics or cues, has limited personally relevant information, and may lack sustainable behavioral or attitudinal impact (Petty & Cacioppo, 1981). Therefore, tailored messages based on psychographic characteristics assessed in market research may be more likely to be perceived as personally relevant and be centrally processed (Kreuter, Farrell, Olevitch, & Brennan, 2000; Kreuter & Wray, 2003; Rimer & Glassman, 1999; Skinner, Campbell, Rimer, Curry, & Prochaska, 1999). Thus, this approach should be explored and examined for validity.

Given the importance of the young adult years in the development of sustained health behaviors and the potential utility of using market research to inform public health campaigns, the present study aimed to use market research to more fully understand the psychographic characteristics and health-behavior profiles of subgroups of college student smokers and determine if participants would endorse the message designed for their respective segment. Little research has attempted to leverage the assessments and methods used by the marketing community to advance the initiatives of public health. By conducting this research, we will be better poised to use market research in our pursuits to increase engagement in tobacco control interventions and compare this approach to the traditional approaches informed by health behavior theories (e.g., those involving risk perception, motivation, self-efficacy) currently used by the public health community.

Methods

In October 2008, students at a two-year college and a four-year university in Minnesota were recruited to complete an online survey. A random sample of 5,500 students at the four-year university and all young adults enrolled at least part-time at the two-year college ($N = 3,334$) were invited to complete the survey (total $N = 8,834$). Students received an e-mail containing an invitation to complete the online survey and a link to the consent form with the alternative of opting out if they chose. Participants were asked for permission to contact them in the future as part of the statement of consent but were not excluded if they did not agree to be contacted. Students who consented to participate were directed to the online survey. To encourage participation, students received up to three e-mail invitations. As an

incentive for participation, all students who completed the survey received entry into a drawing for cash prizes of \$2,500 (one), \$250 (one), and \$100 (five) at each participating school. The University of Minnesota Institutional Review Board approved this study, IRB# 0712S22941.

Of all students who received the invitation to participate, 2,700 (30.6%) returned a completed survey. Among the two-year college students, the response rate was 30.1% ($N = 1,004$), and among the four-year college students, the response rate was 30.8% ($N = 1,696$). The present study focused on college students completing the survey who were aged 18–25 years and who reported any smoking in the past 30 days. Thus, a total of 753 students (306 two-year students and 447 four-year students) are included in these analyses.

Measures

The online survey contained 108 questions assessing a variety of health topic areas. However, for the current analyses, we included only questions related to demographic information, health-related behaviors (i.e., smoking, alcohol consumption, binge-drinking, exercise, limiting fat intake), motivation and confidence to engage in healthy behaviors, health behaviors of closest friends, and market research psychographic factors. Demographic questions assessed students' sex, age, ethnicity, highest parental education level, and type of school attended (i.e., 2-year college or 4-year university).

Health-related behaviors—To assess health-related behaviors, students were asked, “In the past 30 days, on how many days did you: Smoke a cigarette (even a puff)? Drink alcohol? Drink more than five alcoholic drinks on one occasion? Exercise for at least 20 minutes? Limit the amount of fat in your diet?” These questions have been used in previous research (e.g., ACHA surveys, National College Health Risk Behavior Survey, Youth Risk Behavior Surveillance System [YRBSS]). These measures have been investigated by repeated measures of the YRBSS over a two-week period and have been shown to be reliable and valid (Brener et al., 2002). Specifically, Kappas for each of the assessed health behavior in the past 30 days were as follows: drinking alcohol, 70.9%; drinking five or more drinks on one occasion, 67.6%; exercising at least 20 minutes, 41.1%; limiting dietary fat, 53.2%; and smoking, 81.9. Reliability has not been shown to differ by gender, grade, or race/ethnicity (ACHA, 2009; YRBSS, 1997).

Confidence and motivation—Confidence to engage in healthy behaviors was assessed by asking “On a scale of 0 to 10 with 0 being ‘not at all confident’ and 10 being ‘extremely confident,’ assuming you want to, how confident are you that you could do each of the following starting this week and continuing for at least one month: Quit smoking cigarettes (or not start if you do not smoke)? Drink no more than 2 alcoholic beverages per day? Exercise at least three times per week for at least 20 minutes each time? Eat a low-fat diet?”

Motivation to engage in healthy behaviors was assessed by asking “On a scale of 0 to 10 with 0 being ‘I don’t want to at all’ and 10 being ‘I really want to,’ how much do you want: Quit smoking cigarettes (or not start if you do not smoke)? Limit your drinking to no more than 2 alcoholic beverages per day? Exercise at least three times per week for at least 20

minutes each time? Eat a low-fat diet?” (Biener & Abrams, 1991; Maibach, Maxfield, Ladin, & Slater, 1996).

Number of friends engaging in health-related behaviors—We also asked “Out of your five closest friends, how many of them: Smoke cigarettes? Drink alcoholic beverages? Exercise regularly? Eat rich, high-fat foods?” (Maibach et al., 1996).

Market research—To assess psychographic characteristics, we reviewed tobacco industry market research reports (Holm Group, 1998; Philip Morris USA, 1994, 1996). We used items from Philip Morris tobacco industry surveys to inform the development of questions assessing personality characteristics, self-descriptors, fashion, social behavior, preferences in intimate relationships, political views, attitudes about tobacco, and other psychographic variables (see Appendix A). Philip Morris typically performed hour-long in-person interviews with hundreds of questions for their segmentation studies. However, we aimed to parsimoniously assess important psychographic characteristics using a 21-item self-administered assessment. Thus, we needed to develop questions addressing key lifestyle areas but in an abbreviated format more suitable for this methodology. Although this list of variables is not exhaustive, this subset includes potentially important factors, including sensation seeking (Zuckerman, Ball, & Black, 1990), supporting action against the tobacco industry (Ling, Neilands, & Glantz, 2007, 2009), perceived dangers of secondhand smoke (Glantz & Jamieson, 2000), and advertising receptivity (Pierce, Distefan, Jackson, White, & Gilpin, 2002) that have been associated with smoking behavior in prior research. This assessment was also designed to be engaging for the participant.

Our assessment included nominal and ordinal variables. Our ordinal variables were assessed on a 5-point scale assessing the extent to which participants agreed (1 = *Disagree completely* to 5 = *Agree completely*) with a variety of statements (e.g., “I have a much wider circle of friends than most people,” “I like to do things just for the thrill of it”). Thus, higher scores indicate a higher level of agreement with the respective statements.

Five of these items were related to reactions to the tobacco industry and secondhand smoke. For these five items, we created two aggregate variables, similar to prior research using these items (Ling et al., 2007, 2009). Three questions assessed antitobacco industry attitudes (i.e., “I want to be involved with efforts to get rid of smoking,” “Taking a stand against smoking is important to me,” and “I’d like to see cigarette companies go out of business”) and were used for the first subscale score. The number of “agree completely” or “agree” responses to these three items were totaled and considered the total score for this subscale (i.e., range of 0 to 3). The second subscale included the items assessing attitudes about the impact of secondhand smoke (i.e., “I believe that secondhand smoke is dangerous to a non-smoker’s health” and “Inhaling smoke from someone else’s cigarette harms the health of babies and children”). This subscale was analyzed similarly (i.e., range of 0 to 2).

The nominal variables did not use a typical 5-point Likert scale. For example, we asked about fashion sense (e.g., designer, casual), what is important in relationships (e.g., intellectual, emotional, or physical satisfaction), political orientation (e.g., liberal, conservative). One of the nominal variables, how they would describe their friends (e.g.,

popular, mature, tough), was analyzed differently. A factor analysis indicated that three main factors were involved in this list of “friend descriptors”: popular, cool, good-looking; unique, mature, authentic, honest; and macho, tough. Thus, the total of endorsements for each factor was used as a score. Thus, the total scores of the three factors had ranges of 0 to 3 for “popular, cool, good-looking”; 0 to 4 for “unique, mature, authentic, honest”; and 0 to 2 for “macho, tough.”

Validity testing

Message testing was conducted as part of focus group interviews conducted in February through April, 2009, on the two participating college campuses to test the validity of the segments. Participants from these focus groups were drawn from the sample of survey participants who were 18–25 years of age and reported smoking in the prior 30 days. Thus, we identified representatives from each market segment to participate in the validity testing and focus groups.

After the descriptions of the three market segments were examined, we developed messages aimed at reflecting the nuances of each group regarding lifestyle characteristics. These messages were informed both by the universal characteristics of the overall sample as well as the unique characteristics of each group, as depicted above. The resulting messages are provided in Appendix B.

Prior to the focus groups, participants signed informed statement of consent forms and were asked to complete a short survey assessing demographics and other variables not included in the current study. After they completed the survey, the interviewer handed out a message testing packet and began by saying: “We would like to begin by asking you some questions about different messages or stories regarding everyday activities. In your packet, you have a couple of different messages. We would like you to indicate your reaction to each message. Are there any questions?” The packet included each of the messages developed (Appendix B).

Participants were asked the following questions about each of the messages:

- How much does this message describe your own attitude, with responses of 1 = “does not describes my attitude” to 5 = “describes my attitude well”
- How much attention did you pay to this message, with responses of 1 = “no attention at all” to 5 = “complete attention”
- How likely would you be to remember this message, with responses of 1 = “not at all likely to remember” to 5 = “very likely to remember”
- How much does the person talking seem like you, with responses of 1 = “not at all like me” to 5 = “very much like me”

An aggregate total rating was computed for each message, with higher averages indicating greater reflection of personal attitude, amount of attention paid, likelihood of remembering, and identification with the message.

Statistical analysis

Cluster analysis and descriptions—We performed a hierarchical cluster analysis employing Ward's method (Ward, 1963) on the 21 questions included in Appendix A (i.e., not including demographic or health-related variables). Since the data contain both nominal and ordinal values, we first calculated the Gower's general dissimilarity coefficient (Gower, 1971). Then we performed hierarchical clustering procedures based on the distance matrix products. We adopted the pseudo t^2 statistic (Duda & Hart, 1973) to determine the optimal number of clusters.

We performed ANOVA for continuous variables and Chi-square tests for categorical variables to compare demographic, psychographic, and health-related variables among the segments. We then conducted post-hoc comparisons to further explore differences among groups, using Tukey's HSD tests for continuous variables and pair-wise Chi-square test comparisons among categorical variables. The hierarchical cluster analysis was performed using SAS 9.1, and all other analyses were performed using SPSS 15.0.

After conducting the cluster analysis and bivariate comparisons and examining the nature of each cluster, we organized our descriptions of the clusters to match the style of presentation in tobacco industry reports (Holm Group, 1998; Philip Morris USA, 1994, 1996). The authors reviewed responses to all questions, and descriptive names for clusters were generated based on overall character of their responses, prioritizing questions that differentiated the clusters most.

Validity testing—For the validity testing, ANOVA was used to compare ratings of messages among the market segments (i.e., Stoic Individualists, Responsible Traditionalists, Thrill-seeking Socializers) with Bonferroni post-hoc comparisons.

Results

Cluster descriptions

Both the pseudo F^2 statistic and pseudo t^2 statistic indicated three clusters. Table 1 provides demographic characteristics and the psychographic characteristics for each of the clusters. Each cluster is described below.

Stoic individualists (SI)—Stoic Individualists were older than the Thrill-seeking Socializers (described following). They reported less enjoyment of exciting or thrilling activities, indicated less importance of setting long-term goals, and placed more importance on intellectual satisfaction in relationships than both of the other groups. They were less likely to report enjoying being the center of attention, to report having a wide circle of friends, or to indicate that their friends were popular, cool, or good-looking than the Thrill-seeking Socializers. When going out, they more often reported that they tend to just “hang out” and take care of their friends and were more likely than the other groups to report being content if they are wearing clean clothes, with their usual dress being a t-shirt and jeans. They were more likely to be against body art. In terms of politics, they were less likely to be conservative and more often reported being liberal or not political; they were also the least

likely to report attending church services. They were less concerned about secondhand smoke than the Responsible Traditionalists (described next).

Responsible traditionalists (RT)—Responsible Traditionalists were somewhat older and more likely to be female than the Thrill-seeking Socializers. They were less likely to enjoy being the center of attention or exciting/thrilling experiences than Thrill-seeking Socializers. They reported having fewer friends in general and were less likely to indicate that their friends were popular, cool, or good-looking than the Thrill-seeking Socializers or macho or tough than either of the other two groups. They were more likely to value emotional or spiritual satisfaction in their relationships and believe in sex after marriage. At parties, they were the most likely group to report just watching and hanging out and the least likely to report finding “the center of the party.” In terms of fashion, they are likely to get compliments on their attire. They were more likely to report being politically conservative and to go to church weekly versus the other groups. They endorsed greater concern about secondhand smoke than Stoic Individualists.

Thrill-seeking socializers (TS)—Thrill-seeking Socializers were the youngest of the three groups and were more likely to be male than the Responsible Traditionalists. They were the most likely to report enjoying being the center of attention, enjoying exciting and thrilling activities, having a wide circle of friends, and valuing setting long-term goals. In regard to relationships, they more often described their friends using all three of the “friend descriptors,” which might reflect their report of having a wider group of friends. They were also more likely to report valuing physical satisfaction in their intimate relationships and that sex is best after a few dates or after getting to know someone’s name compared to the other groups. At parties, they more often find the center of the party or make the party happen and were more likely to report being ready for a photo shoot and on the leading edge of fashion. They also were more likely to have a couple of tattoos or piercings. They have a moderate view politically and religiously.

Comparison of health-related behaviors—Table 2 shows that significant differences were found in regard to number of days of drinking ($p = .02$), with Thrill-seeking Socializers having a higher rate than Stoic Individualists; binge drinking ($p < .001$), with Thrill-seeking Socializers having a higher rate than both Stoic Individualists and Responsible Traditionalists; and limiting of dietary fat intake ($p < .001$), with Responsible Traditionalists having a higher rate than Stoic Individualists. In regard to confidence and motivation for engaging in health behaviors, significant differences were found in confidence ($p = .01$) and motivation ($p = .01$) in exercising for at least 20 minutes three or more times per week, with Thrill-seeking Socializers indicating greater confidence and motivation than Stoic Individualists. Motivation to limit fat intake also showed a significant difference ($p = .008$), with Responsible Traditionalists having greater motivation than Stoic Individualists. A marginally significant difference was also found in motivation to limit drinking to two or less drinks per day ($p = .05$), with Responsible Traditionalists having greater motivation than Thrill-seeking Socializers. In regard to number of friends engaging in these behaviors, significant differences were found in number of friends who drink ($p < .001$) or smoke ($p < .$

001), with Thrill-seeking Socializers reporting more friends who drink or smoke than either Stoic Individualists or Responsible Traditionalists.

Validity testing

A total of 73 participants were included in the message testing. This subset of the original sample included 27 Stoic Individualists (14 males, 13 females), 24 Responsible Traditionalists (6 males, 18 females), and 22 Thrill-seeking Socializers (12 males, 10 females). The average age of this group was 20.60 ($SD = 1.79$), and 90.3% ($N = 65$) were non-Hispanic White.

Overall ratings of similarity to personal attitude, attention paid, and likelihood of remembering the messages were compared. Significant differences in ratings were found among the market segments (Table 3), with Stoic Individualists rating their message most favorably ($p = .04$), Responsible Traditionalists rating their message most favorably ($p < .001$), and Thrill-seeking Socializers rating their message most favorably ($p < .001$).

Discussion

The present study utilizes a unique procedure for social and behavioral assessment and research using market segmentation to characterize groups of college students and examine their health behavior patterns. Of particular importance is that, by including *only* psychographic variables in the cluster analysis, we identified groups of young adults who showed not only unique psychographic profiles, but also unique health behavior profiles. Moreover, the messages developed as a result of this market research were perceived as more relevant and more similar to their own attitude, which may have implications for enhancing health promotion interventions.

This study is an extension of previous studies using a cluster analysis approach to identify segments of individuals (Ling, Neilands, Nguyen, & Kaplan, 2007). Previous research (Maibach et al., 1996) has identified segments of the population based on health behaviors and attitudes. This approach, although important and providing a great deal of information about individual health behavior profiles, is limited in the amount of general lifestyle characteristics impacting these behaviors. Ling and Glantz (2002a) have advocated using an approach more similar to that of the tobacco industry – that is, using more psychographic information to develop messages that appeal to the lifestyles, goals, and values of individuals rather than relying on an approach guided by more traditional values of health.

Very limited research has exclusively used psychographic variables to characterize groups of college students. These results suggest that attending to psychographic or lifestyle factors of subgroups may provide information regarding the values and priorities that underlie or impact health behaviors, as well as potential intervention targets for promoting improved health behaviors. Thus, this research adds significantly to the literature.

The results from the message testing indicated that subgroups of college students with distinct psychographic profiles endorsed the messages intended for their respective segment, implying that the market segments have concurrent validity. As the Elaboration Likelihood

Model (Petty & Cacioppo, 1981) would predict, college students perceive messages reflecting the characteristics of their segment to be more salient and memorable. Therefore, tailoring messages based on psychographic characteristics may be one way to increase engagement in health promotion interventions, including cessation interventions (Kreuter et al., 2000; Kreuter & Wray, 2003; Rimer & Glassman, 1999; Skinner et al., 1999). Thus, it is critical to address the perspectives not only of the general college population, but also the specific subgroups present within this population in our pursuits to develop relevant and engaging health messages.

Implications for social marketing

This research has implications for future research and health promotion interventions and campaigns. First, future research should investigate the utility of this approach in designing more elaborate and tailored health promotion messages and campaigns. The psychographic information related to each group may aid in identifying potential target variables for these types of messages. A common intervention approach is to emphasize health and the negative consequences of engaging in health compromising behaviors. Our approach, however, helps to address other important values and goals among subgroups that can then serve as a platform for developing health promotion messages. For example, the Thrill-Seeking Socializers seem to value excitement, being social and popular, and being attractive. Thus, rather than trying to appeal to health among this group, appealing to these other values to enhance health promoting behaviors may be more effective. Promotions emphasizing the unattractiveness of being drunk and smoking may counteract industry efforts to make these behaviors attractive. Also, it may be useful to provide alternatives to partying behaviors that capitalize on this group's willingness to engage in exercise, such as bicycling or skiing groups, or engaging in weekend activities that are social and exciting yet health-promoting or incompatible with smoking or drinking.

Similarly, the Responsible Traditionalists could be targeted by appealing to their values, particularly a tendency to be risk-adverse and goal-oriented. Messages emphasizing the incompatibility of smoking or drinking with pursuing goals, saving money, and being responsible may be important for this group. Public health campaigns could target the Stoic Individualists by altering the image of the independent nonconformist such that it does not involve smoking (i.e., the most prominent health compromising behavior among this group), but rather rejects tobacco industry efforts to target them may be effective. Similar messages promoting exercise and nutrition in an unhealthful environment might also be attractive to this group.

Moreover, future work should compare the effectiveness of interventions and campaigns informed by this approach in comparison to the more traditional approaches informed by conventional theory to determine if, in fact, engagement and processing of intervention messages is enhanced through using market research.

Limitations

This study has limitations that might be addressed in future research. First, this study was conducted in a sample of college students at two colleges in the Midwest, with a majority of

respondents being female and Caucasian. Thus, these findings may not generalize to other college populations. In addition, the response rate to the Internet survey suggests that respondents may not be representative of the total college population. There may be segments among those who do not respond to Internet surveys who are not described in this research, or the percentage of students belonging to a particular segment may be under- or overestimated based on their representation in the study sample. In this regard, it is somewhat reassuring that our prior research has demonstrated that, despite lower response rates than mail or phone surveys, Internet surveys yield similar estimates of tobacco use compared to surveys completed by mail or phone (An et al., 2007). Moreover, this study focused exclusively on college student smokers; future work should examine this approach among the broader college student population. In addition, the market research questions developed for this study should be more extensively evaluated to determine which are most helpful in characterizing different groups of young adults and characteristics that were important but unmeasured in this study. Further validation of these questions could then be done and would be highly beneficial. This research serves as a springboard and a model for continued research in this area.

Conclusions

This study uses a novel approach for conceptualizing college student health behavior by understanding their different psychographic and lifestyle profiles. Doing so yields subgroups of young adults with distinct psychographic profiles and corresponding differing health-related behaviors. Our results indicate that market segments may be driven by different values that influence their health behaviors and thus should be approached differently. Future research might focus both on market segmentation in intervention delivery modality and intervention messages to maximize engagement and impact.

By utilizing a market research method for understanding distinct and common characteristics, we were able to develop messages targeting each group, which showed some promise for increasing attention, likelihood of remembering, and relevance of these tailored messages. This is preliminary work aimed at defining subgroups to prioritize for interventions and to develop health promotion messages that are more engaging for different segments of the young adult population. Information obtained using this approach may foster the development of more successful interventions that are sustained across time due to the inclusion of tailored, central processing characteristics.

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Appendix A Market Segmentation Questionnaire

Indicate how much you agree with the following statements using the scale below.

- 1 = Disagree completely
- 2 = Disagree somewhat
- 3 = Not sure/neutral
- 4 = Agree somewhat

5 = Agree completely

1. I like to be the center of attention.
2. I like to have new and exciting experiences and sensations even if they are a little frightening.
3. I like doing things just for the thrill of it.
4. I have a much wider circle of friends than most people.
5. It is extremely important to me to be able to set long-term goals for myself.
6. I want to be involved with efforts to get rid of smoking.
7. Taking a stand against smoking is important to me.
8. I'd like to see cigarette companies go out of business.
9. I would wear or use tobacco industry promotional items, such as clothing, bags, or other items, that include the company brand name.
10. I believe that secondhand smoke is dangerous to a non-smoker's health.
11. Inhaling smoke from someone else's cigarette harms the health of babies and children.
12. Which statements best describe extremely well the people you socialize with on a regular basis? (Mark all that apply.)

Popular

Cool, hip

Unique, individualistic

Macho

Tough, rugged

Mature

Authentic, real

Honest, sincere

Good looking

13. I'm interested in:

A long-term relationship

A relationship with growth potential

A relationship with no strings attached

Someone with shared interests and activities to spend time with

14. For a relationship to work for me, it's most important that I'm satisfied:

Physically

Emotionally

Spiritually

Intellectually

15. Sex is best:

After marriage

After getting to know someone really well

After a few dates

After getting to know someone's name

16. When it comes to parties:

I'm just watching and hanging out

I'm watching out for and taking care of my friends

I find the center of the party

I make the party happen

I'm worried about how I'll feel in the morning.

17. When I get dressed to go out with my friends, I'm:

Ready for a photo shoot

Likely to get compliments on what I'm wearing

Neatly dressed

Content if my clothes are at least clean

18. I would describe my fashion sense as:

Designer: I like to be on the leading edge of fashion

Contemporary: I won't win any fashion awards, but I'm not a slob

Casual: I'm dressed up in a t-shirt and jeans

Urban: Straight from the street

Alternative: I hate "fashion" but got style

19. Body art?

I have a couple tattoos and/or piercings.

Nothing pierced beyond the ears (or maybe the navel) or a small tattoo.

I've thought about it.

Not a chance!

20. In terms of politics, I'm:

Conservative

Moderate

Independent

Liberal

Not political

21. How often do you attend church or a religious service?

Never

On holidays

Once a month or so

Once a week or more

Appendix B Messages

Cluster 1: Stoic Individualists

“My typical weekend is usually good fun, but I try to keep myself on track. When I go out, I usually just sit back and watch the shenanigans that happen around me. My friends and I are pretty mature, so we don’t usually get as drunk as some of the others do. When it comes to dating, I like to take things slow and make sure my date and I are really connecting emotionally and spiritually. I try to take it pretty slow sexually as well.”

Cluster 2: Responsible Traditionalists

“My typical weekend is usually pretty low key. When I go out, I like to keep it casual. At parties, I am usually just hanging out and trying to make sure my friends are keeping themselves out of trouble. I drink, but I don’t usually get wasted when I go out. When it comes to dating, I want someone who will be on the same level with me emotionally and intellectually.”

Cluster 3: Thrill-seeking Socializers

“My typical weekend is a whirlwind of parties and friends. I start off making myself look good, rallying my friends and a date (or two), and then heading out for some excitement. The party pretty much starts when I get there, and I love taking the fun to the next level. After a few drinks with friends, that’s usually when I have the urge to join them in having a cigarette. When it comes to dating, it’s important to me that I am both emotionally and physically into that person.”

TABLE 1
Bivariate Comparisons of Demographic and Psychographic Characteristics Among Three Market Segments of College Students

VARIABLE	ALL N = 753 N (%)	STOIC INDIVIDUALISTS (SI) N = 277 (36.8%)	RESPONSIBLE TRADITIONALISTS (RT) N = 197 (26.2%)	THRILL- SEEKING SOCIALIZERS (TS) N = 279 (37.1%)	p	POST-HOC COMPARISONS
Demographics						
Age (SD)	20.51 (1.99)	20.71 (2.01)	20.70 (1.98)	20.16 (1.93)	.001	SI > TS, RT > TS
Gender (%)					.13	TS more likely male than RT
Male	295 (39.2)	110 (39.7)	66 (33.5)	119 (42.7)		
Female	458 (60.8)	167 (60.3)	131 (66.5)	160 (57.3)		
Ethnicity (%)					.17	—
Non-Hispanic White	676 (89.8)	244 (88.1)	174 (88.3)	258 (92.5)		
Other	77 (10.2)	33 (11.9)	23 (11.7)	21 (7.5)		
Highest parental education					.12	SI parents less educated than TS
<Bachelor's degree	465 (61.9)	182 (65.7)	124 (62.9)	159 (57.4)		
Bachelor's degree	286 (38.1)	95 (34.3)	73 (37.1)	118 (42.6)		
Type of school					.42	—
2-year college	306 (40.6)	121 (43.7)	78 (39.6)	107 (38.4)		
4-year university	447 (59.4)	156 (56.3)	119 (60.4)	172 (61.6)		
Market research variables						
Like to be center of attention (SD) ^a	3.13 (1.08)	2.80 (0.95)	3.02 (1.02)	3.53 (1.12)	<.001	SI < TS, RT < TS
Like exciting experiences even if frightening (SD) ^a	4.21 (0.91)	3.77 (0.93)	4.11 (0.87)	4.72 (0.61)	<.001	All significant
Like doing things just for the thrill of it (SD) ^a	3.98 (1.00)	3.54 (0.98)	3.81 (1.00)	4.53 (0.73)	<.001	All significant
Have a wider circle of friends than most people (SD) ^a	3.41 (1.18)	3.00 (1.14)	3.20 (1.11)	3.96 (1.04)	<.001	SI < TS, RT < TS
Important to set long-term goals (SD) ^a	4.58 (0.73)	4.30 (0.81)	4.63 (0.76)	4.83 (0.49)	<.001	All significant
Antitobacco industry attitudes (SD) ^a	1.15 (1.01)	1.06 (0.96)	1.13 (1.04)	1.24 (1.02)	.11	—
Concern about secondhand smoke (SD) ^a	1.67 (0.66)	1.59 (0.74)	1.76 (0.54)	1.70 (0.64)	.01	RT > SI

VARIABLE	ALL N = 753 N (%)	STOIC INDIVIDUALISTS (SD) N = 277 (36.8%)	RESPONSIBLE TRADITIONALISTS (RT) N = 197 (26.2%)	THRILL- SEEKING SOCIALIZERS (TS) N = 279 (37.1%)	p	POST-HOC COMPARISONS
Describe friends as popular, cool, good looking (SD)	1.30 (1.16)	1.00 (1.11)	1.04 (1.00)	1.79 (1.16)	<.001	TS > ST, TS > RT
Describe friends as unique, mature, authentic, honest (SD)	2.75 (1.20)	2.70 (1.17)	2.65 (1.20)	2.87 (1.22)	.10	—
Describe friends as macho, tough (SD)	0.37 (0.65)	0.33 (0.59)	0.16 (0.42)	0.56 (0.77)	<.001	All significant
I'm interested in: (%)					.90	—
A long-term relationship	384 (51.0)	144 (52.0)	102 (51.8)	138 (49.5)		
A relationship with growth potential	217 (28.8)	75 (27.1)	58 (29.4)	84 (30.1)		
A relationship with no strings attached	25 (3.3)	10 (3.6)	4 (2.0)	11 (3.9)		
Someone with shared interests to spend time with	127 (16.9)	48 (17.3)	33 (16.8)	46 (16.5)		
In a relationship, it's important that I'm satisfied: (%)					.002	All significant
Physically	62 (8.2)	20 (7.2)	8 (4.1)	34 (12.2)		
Emotionally	565 (75.0)	201 (72.6)	154 (78.2)	210 (75.3)		
Spiritually	39 (5.2)	13 (4.7)	16 (8.1)	10 (3.6)		
Intellectually	87 (11.6)	43 (15.5)	19 (9.6)	25 (9.0)		
Sex is best: (%)					.19	—
After marriage	69 (9.2)	27 (9.7)	24 (12.2)	18 (6.5)		
After getting to know someone really well	560 (74.4)	209 (75.5)	146 (74.1)	205 (73.5)		
After a few dates	85 (11.3)	26 (9.4)	20 (10.2)	39 (14.0)		
After getting to know someone's name	39 (5.2)	15 (5.4)	7 (3.6)	17 (6.1)		
When it comes to parties: (%)					<.001	All significant
I'm just watching and hanging out	211 (28.0)	84 (30.3)	92 (46.7)	35 (12.5)		
I'm watching out for and taking care of friends	182 (24.2)	96 (34.7)	45 (22.8)	41 (14.7)		
I find the center of the party	198 (26.3)	56 (20.2)	25 (12.7)	117 (41.9)		
I make the party happen	120 (15.9)	27 (9.7)	24 (12.2)	69 (24.7)		
I'm worried about how I'll feel in the morning	42 (5.6)	14 (5.1)	11 (5.6)	17 (6.1)		
When I get dressed to go out with friends, I'm: (%)					<.001	All significant

VARIABLE	ALL N = 753 N (%)	STOIC INDIVIDUALISTS (SI) N = 277 (36.8%)	RESPONSIBLE TRADITIONALISTS (RT) N = 197 (26.2%)	THRILL- SEEKING SOCIALIZERS (TS) N = 279 (37.1%)	p	POST-HOC COMPARISONS
Ready for a photo shoot	94 (12.5)	28 (10.1)	20 (10.2)	46 (16.5)		
Likely to get compliments on what I'm wearing	222 (29.5)	63 (22.7)	68 (34.5)	91 (32.6)		
Neatly dressed	300 (39.8)	121 (43.7)	85 (43.1)	94 (33.7)		
Content if my clothes are at least clean	137 (18.2)	65 (23.5)	24 (12.2)	48 (17.2)		
I would describe my fashion sense as: (%)					<.001	All significant
Designer: I like to be on leading edge of fashion	86 (11.4)	21 (7.6)	8 (4.1)	57 (20.4)		
Contemporary: I won't win fashion awards, but I'm not a slob	284 (37.7)	38 (13.7)	156 (79.2)	90 (32.3)		
Casual: I'm dressed up in a t-shirt and jeans	294 (39.0)	189 (68.2)	4 (2.0)	101 (36.2)		
Urban: Straight from the street	20 (2.7)	7 (2.5)	4 (2.0)	9 (3.2)		
Alternative: I hate "fashion" but got style	69 (9.2)	22 (7.9)	25 (12.7)	22 (7.9)		
Body art? (%)					<.001	RT differed from SI and TS
I have a couple tattoos and/or piercings	322 (42.8)	122 (44.0)	63 (32.0)	137 (49.1)		
Nothing but ears, navel, or small tattoo	203 (27.0)	58 (20.9)	77 (39.1)	68 (24.4)		
I've thought about it	161 (21.4)	63 (22.7)	43 (21.8)	55 (19.7)		
Not a chance!	67 (8.9)	34 (12.3)	14 (7.1)	19 (6.8)		
In terms of politics, I'm: (%)					<.001	All significant
Conservative	116 (15.4)	27 (9.7)	43 (21.8)	46 (16.5)		
Moderate	82 (10.9)	36 (13.0)	28 (14.2)	18 (6.5)		
Independent	93 (12.4)	27 (9.7)	25 (12.7)	41 (14.7)		
Liberal	210 (27.9)	84 (30.3)	55 (27.9)	71 (25.4)		
Not political	252 (33.5)	103 (37.2)	46 (23.4)	103 (36.9)		
How often do you attend religious service? (%)					.02	SI and RT differed
Never	205 (27.2)	93 (33.6)	43 (21.8)	69 (24.7)		
On holidays	328 (43.6)	115 (41.5)	89 (45.2)	124 (44.4)		
Once a month or so	169 (22.4)	55 (19.9)	44 (22.3)	70 (25.1)		
Once a week or more	51 (6.8)	14 (5.1)	21 (10.7)	16 (5.7)		

^a Lower scores indicate greater endorsement of item.

Note: Post-hoc comparisons were conducted using Tukey's HSD for continuous variables and pair-wise Chi-squared comparisons for categorical variables.

TABLE 2
ANOVA Comparisons of Health Behaviors and Psychosocial Characteristics Among Three Market Segments of College Students

VARIABLE	ALL <i>M (SD)</i>	STOIC INDIVIDUALISTS (SI) <i>M (SD)</i>	RESPONSIBLE TRADITIONALISTS (RT) <i>M (SD)</i>	THRILL-SEEKING SOCIALIZERS (TS) <i>M (SD)</i>	<i>P</i>	POST-HOC COMPARISONS (TUKEY'S HSD)
Number of days of:						
Smoking	16.09 (12.46)	16.91 (12.48)	14.74 (12.14)	16.23 (12.61)	.17	–
Drinking	6.51 (5.58)	5.94 (5.21)	6.27 (6.14)	7.24 (5.47)	.02	SI < TS
Binge drinking	5.56 (5.04)	3.58 (4.13)	3.65 (4.78)	5.13 (4.72)	<.001	SI < TS, RT < TS
Exercising	9.97 (9.07)	9.43 (9.14)	9.80 (8.01)	10.61 (9.66)	.30	–
Limiting fat intake	8.57 (10.53)	6.93 (10.05)	10.67 (10.59)	8.72 (10.71)	.001	SI < RT
Confidence to:						
Quitting smoking	6.62 (3.60)	6.36 (3.56)	6.87 (3.56)	6.70 (3.66)	.29	–
Limit drinking	7.49 (3.43)	7.59 (3.31)	7.72 (3.38)	7.22 (3.58)	.25	–
Exercising	7.45 (2.85)	7.08 (2.91)	7.50 (2.89)	7.78 (2.73)	.01	SI < TS
Limiting fat intake	6.22 (2.94)	5.97 (2.90)	6.40 (2.74)	6.34 (3.13)	.21	–
Motivation to:						
Quitting smoking	7.53 (3.16)	7.32 (3.23)	7.91 (2.95)	7.47 (3.23)	.13	–
Limit drinking	5.93 (3.54)	6.03 (3.48)	6.33 (3.45)	5.54 (3.64)	.05	RT > TS
Exercising	8.39 (2.45)	8.05 (2.55)	8.44 (2.55)	8.66 (2.24)	.01	SI < TS
Limiting fat intake	6.96 (3.20)	6.52 (3.25)	7.43 (2.96)	7.06 (3.27)	.008	SI < RT
Number of friends who:						
Smoke	2.83 (1.46)	2.79 (1.44)	2.54 (1.40)	3.09 (1.48)	<.001	SI < TS, RT < TS
Drink	4.40 (1.08)	4.32 (1.08)	4.24 (1.29)	4.60 (0.89)	<.001	SI < TS, RT < TS
Exercise regularly	2.17 (1.32)	2.08 (1.25)	2.21 (1.38)	2.24 (1.35)	.34	–
Eat rich, fatty foods	3.33 (1.38)	3.35 (1.31)	3.20 (1.41)	3.41 (1.41)	.29	–

Note. *M* = mean; *SD* = standard deviation.

TABLE 3

ANOVA Comparisons of Participants' Ratings of Similarity to Their Own Attitudes, Attention to Message, and Likelihood of Remembering Message

MESSAGE	STOIC INDIVIDUALISTS (SI) <i>M (SD)</i>	RESPONSIBLE TRADITIONALISTS (RT) <i>M (SD)</i>	THRILL-SEEKING SOCIALIZERS (TS) <i>M (SD)</i>	<i>p</i>	POST-HOC COMPARISONS (BONFERRONI)
Stoic individualists	13.85 (2.74)	13.78 (3.18)	11.91 (2.60)	.04	SI > TS
Responsible traditionalists	15.15 (2.54)	17.04 (2.60)	12.82 (3.32)	<.001	All significant
Thrill-seeking socializers	11.81 (3.33)	10.09 (3.13)	15.00 (4.06)	<.001	SI < TS, RT < TS

Note. *M* = mean; *SD* = standard deviation.