SOJNR
Southern Online Journal of Nursing Research

Volume 10 – Number 4 www.snrs.org

Cluster Analysis of Alabama Adolescent Health Risk and Health Compromising Behaviors

December 2010

Alice L March PhD, RN, FNP-C, CNE
Capstone College of Nursing
The University of Alabama

Linda L. Knol, PhD, RD
Department of Human Nutrition and Hospitality Management
The University of Alabama

Acknowledgments

Funding for the completion of this study was provided by the Research Grants Committee of the University of Alabama.

Abstract

This study, guided by the problem behavior theory, examined patterns of health risk and health compromising behaviors in high school attending youth residing in Alabama by employing the cluster analysis method. Using results from the 2005 Alabama Youth Risk Behavior Survey, a secondary data analysis was completed using the WARDS clustering method of

SAS v9.1 to group participants into clusters based on responses to selected health risk and health compromising variables. Cluster analysis identified five distinct behavioral patterns. In order of descending frequency they included: (1) poor diet/non-risk takers, (2) thrill seekers,(3) injury potential, (4) television watcher/milk drinkers, and (5) non-risk takers. Findings of distinct patterns support the problem behavior theory by demonstrating that behaviors do co-occur and result in specific clustering of health risk and health compromising behaviors. These findings can guide development of community and school programs designed to provide primary and secondary prevention interventions by helping to inform public health practitioners of the expected patterns of multiple healthy and unhealthy patterns of behavior.

Keywords: health risk behavior, health compromising behavior, cluster analysis, problem behavior theory

Cluster Analysis of Alabama Adolescent Health Risk and Health Compromising Behaviors

Throughout adolescence, youth make assessments about the meaning of their social environment and decisions about their health related actions, hopefully leading to behaviors that ensure healthy lives. Along this developmental journey they encounter situations requiring decisions in response to new and untested social situations. These choices have far reaching consequences that result in long-term health and wellness, or chronic illness. The co-occurrence of these behaviors may intensify the threat to health. Although many studies investigate co-occurrence of health risk behaviors (HRB), few studies exist that investigate both HRB and health compromising behaviors (HCB), and only rarely do studies use cluster analysis to determine the patterns of those behavioral groupings. This study, guided by the problem behavior theory, examined patterns of those behaviors in high school attending youth residing in Alabama by employing the cluster analysis method.

Adolescents are healthy, yet risky behaviors may result in death during adolescence from intentional and unintentional injury.[1] Lifestyle choices including tobacco, drug, and alcohol use, poor eating habits, limited physical activity, and risky sexual behaviors may result in subsequent poor health and disability, impacting adult life. One third of chronic adult disease and two thirds of premature adult deaths are related to health behavior patterns established during adolescence.[2]

Throughout the world many behaviors place youth at risk for poor health outcomes. Poor eating habits and physical inactivity cause and worsen overweight and obesity. Tobacco products addict adolescents, increasing the possibility of early adult death from cardiovascular disease and tobacco related cancers. Alcohol or illicit drug use impairs decision-making ability and reduces self-control, raising the probability of making poor choices and increasing the risk of

unintentional injury. Homicide and suicide rank as the second and third leading causes of death among youth ages 15 to 19 years old. Youth ages 15 to 25, account for 45% of all new HIV cases, and 16 million (11%) of all births are to women ages 15 to 19.[2]
Research has helped to clarify the factors that affect adolescent participation in HRB and HCB, but gaps in the literature exist. The terms HRB and HCB are similar, yet easy to distinguish from one another. Health risk behaviors include tobacco, alcohol and other substance use, risky sexual behaviors, weapon carrying, and fighting. Health compromising behaviors are not likely to produce immediate disease or disability, but rather subsequent adult health impairment and perhaps early death. These behaviors include sedentary lifestyles and poor dietary habits.[3] Studies have not yet examined how HRB and HCB may cluster. This non-experimental descriptive study reports a secondary analysis of data from the 2005 Alabama Youth Risk Behavior Survey (AL-YRBS). The guiding framework employs the problem behavior theory (PBT) to organize the multiple behaviors selected for examination of the clustering patterns of HRB and HCB among Alabama adolescents.

The PBT states that behaviors are goal directed and that actions taken to obtain those goals are either conforming or deviant in nature. The term deviant refers to the action or actions of a person, rather than the actual person. Risk factors and protective factors act together to produce a dynamic state of proneness that pushes youth toward or away from behaviors intended to reach the goal of independent adult functioning.[4] In the early development of the PBT, a combination of six behaviors represented actions which reflected a syndrome, rather than individual activities occurring at random in the same individual. Those behaviors included activism/social protest, drug use, sexual behaviors, alcohol use, problem drinking, and general deviant behaviors. A multiple problem-behavior index represented the degree of participation in behaviors, as well as their interrelatedness to each other.[5] Later PBT research identified additional behaviors that were considered HCB rather than HRB.[4] The current study seeks to support the theory's premise that HRB and HCB reflect syndrome like behaviors by using cluster analysis to demonstrate specific groupings of behaviors in school attending Alabama youth.

Recent research supports the proposition that behaviors may cluster and therefore participation in one area may indicate participation in another, but the research remains limited in scope. For example, concurrent drug or marijuana was associated with smoking onset[6] and drug use increased the risk of considering suicide.[7] Both drug use and delinquent behaviors were related to an increase risk of depressed mood.[8] Marijuana users reported higher rates of delinquency[9] and tobacco use has been associated with school problems as well as other problem behaviors.[10] Alcohol use was related to early sexual activity, multiple partners and unprotected intercourse.[11,12]

These findings demonstrate that adolescents are participating in multiple concurrent behaviors that place their future health at risk. Two studies were identified that used cluster analysis to examine HRBs. In one study, one cluster was characterized by early sexual intercourse, alcohol use, smoking, marijuana use, and truancy among European American teens and young men, and another group of young African American men formed a cluster characterized by truancy, early sexual intercourse and fighting.[13] The other study examined physical activity, sedentary behaviors, parental involvement, and participation in HRB. The overall conclusion of that study suggested that adolescents who participate in physically active behaviors, and who have parental involvement in those behaviors, are less likely to report HRB.[14] These findings begin to inform researchers of the possible clustering of behaviors that may occur, yet only one study considered HRB and HCB in the same model. This secondary analysis of the 2005 AL-YRBS reports those relationships in one state of the US. Results from this study contribute to the knowledge base required to develop interventions designed to impact the clusters of HRB and HCB that are associated with long term health impairments. Ultimately, research validated interventions may positively impact global public health by reducing the burden of illness and disease in adults through primary and secondary prevention.

Methods

Data Sources: 2005 Alabama Youth Risk Survey

This secondary data analysis considers a sample of students attending high school in Alabama who were in the 9th through the 12th grades, and completed the 2005 AL-YRBS. Unfortunately the 2007 AL-YRBS data set was not available in a usable form and the 2009 AL-YRBS had not been released yet. The state survey is based on the national survey which has been in existence for nearly two decades. The National YRBS is a representative survey which gathers data on priority health behaviors. It was developed in response to the need for reliable, comprehensive data evaluating the prevalence of and changes in health behaviors among adolescents.[15,16] Sample populations are obtained by use of a three-stage cluster design to produce a nationally representative sample of adolescents enrolled in grades 9 to 12.[15,17] The sampling procedures produce results accurate within 5% at a confidence interval of 95%. The state YRBS samples are produced based on the sampling design of the National YRBS.

Reliability of the National YRBS has been demonstrated in studies by the CDC, and responses to the YRBS questionnaire were consistent with other surveys of adolescent risk behaviors.[16,17] Content validity was established by input from academia, federal agencies, and state and national health departments.[16] Three factors that may also affect the validity of

this tool, related to accuracy and honesty of answers, include cognitive processes, situational variables, and social desirability. Cognitively, to process the question the adolescent must understand the question, be able to remember the event, and then form a response. Situational variables and social desirability are closely connected. This situational perspective considers the adolescent's experience within the environment, which creates pressure to answer questions in a socially desirable way.[18] However, even though inconsistencies in reporting certain behaviors may affect the findings, the direction of the findings and magnitude of variables may still be accurate.[19]

State YRBS versions originally identical to the national survey, can be altered slightly by individual school districts. The 2005 AL-YRBS assessed demographic information and contained 83 questions related to HRB and HCB. Once the sample design was applied and schools chosen, parental consent and student accent were obtained. A trained data collector administered the survey in a required class and data were submitted for processing. Data processing of surveys assessed for out-of-range responses, logical inconsistencies, missing data and added assigned weights. Data which were logically inconsistent were re-coded as missing.[17] The weight applied adjusted for student non-response, as well as the distribution of students by grade, gender, and race/ethnicity in the school district, and thus created a representative sample for that locale.[15]

The final 2005 AL-YRBS data set was obtained for this study by obtaining permission from the CDC for release of the data for a secondary analysis. At the time these analyses were completed the 2005 AL-YRBS was the latest, reliable version of the AL-YRBS survey. The University of Alabama, Office of Research Compliance approved the human subject protection request. Prior to the data collection the sampling process employed by the National YRBS selected a representative sample of adolescents attending public schools in Alabama. The total number of Alabama respondents was 1,140. The current study includes the subsample of those students who responded to all of the questions that defined the variable retained for the cluster analysis (n= 827).

Measures

Seventeen measures, based on variables consistent with PBT, were re-coded for use as the dependent variables representing HRB and HCB in a cluster analysis (Table 1) to provide dichotomous variables for grouping purposes and were consistent with CDC reports for re-coding of these variables.[20] Demographic data collected by the 2005 AL-YRBS included age, sex, grade in school, and race/ethnicity. Due to the lack of adequate representation of some groups, the

race/ethnicity variable was re-coded to include four categories; Hispanic, Non-Hispanic black, Non-Hispanic white, and Other.

Statistical Analysis

Cluster analysis allows researchers to group participants into distinct groups or clusters, which are based on similar sets of behaviors.[21] Using this method, researchers can look for overall patterns of behavior rather than just one behavior. Each person in the sample is assigned to a unique group or cluster based on their responses to the re-coded dependent variables listed in Table 1. Individuals who respond to all 17 questions in the same manner will be grouped together. Thus, this type of analysis will identify groups of teens that engage in similar behaviors, compromising their immediate safety and potentially their long term health and quality of life. The WARDS clustering method in SAS v9.1 grouped this sample of adolescents into clusters based on responses to the re-coded variables listed in Table 1. The cubic cluster criterion, a statistic generated in the WARDS procedure, was plotted against the number of potential clusters. This graph provided a visual tool to help identify the number of distinct groups. Another multivariate analysis technique, principle component analysis, was used to verify the number of unique clusters.

Cluster analysis identified five unique patterns of HRB and HCB (Table 2). Once the clusters were defined, then overall and within group frequencies were computed for health risk and health compromising behaviors. Each cluster group was also described based on demographics. The table, Percentage of Health Risk and Health Compromising Behaviors Among Alabama Students by Cluster Group, describes the overall patterns of the total sample of Alabama adolescents who were retained from the initial sample. Comparison patterns, based on variables used for the cluster procedure, are presented in tabular form and discussed below. Once the clusters of adolescents were finalized, each group was described based on behavior and other descriptive statistics (sex, grade in school and race/ethnicity). The AL-YRBS used a multistage, stratified sampling design, which allows researchers to use the sampling weights provided within the dataset to estimate the statewide prevalence of health risk and health compromising behaviors. Thus, SUDAAN was used to compute the prevalence rates while adjusting for sampling design and incorporating the sampling weights.[22] Results of the descriptive demographic statistics by cluster are found in Table 3.

Rather than discuss each cluster using numbers, researchers who use cluster analysis will often name the clusters based on the distinctive or defining characteristics of the group. Thus, the data displayed in Table 2 were used to determine the predominant characteristics of each cluster and descriptive names were selected by the researchers. For example, the

group with the highest reported participation in weapon carrying, violence, and previous unintentional injury were named the Injury Potential Cluster.

As presented in Table 3, the total student sample was evenly split between males and females (49.8 and 50.2% respectively). The statistics related to self identification of race revealed more Non-Hispanic white students, with the next largest group reporting Non-Hispanic black as their race, and the fewest reporting either Hispanic or Other. Age was grossly represented by grade in school, and as grade in school increased, the percentage of students by grade decreased, from 31.2 in 9th to 20.8 in 12th grade. This pattern is consistent with the national trend of lower participation rates in later grades.

Results

Cluster analysis identified five distinct behavioral patterns among Alabama adolescents. A description of each group and a comparison with the overall student group (N-827) follows. Specific percentages of reported behaviors and demographic data can be found in Tables 2 and 3, respectively.

Poor Diet/Non-Risk Taker Cluster

The most prominent behavior pattern identified among Alabama adolescents was seen in 58.2% (n= 481) of the adolescents. This cluster was identified as the poor diet/non-risk taker cluster because the common behaviors within this group, making the students in this group different from the others, included poor dietary habits, limited physical activity levels, and less participation in risky behaviors. All students in this group reported low/poor intake of milk and low/poor intake of fruit/vegetables, and 68.6% (the highest percent in the sample) reported limited physical activity. This group did not report any weapon carrying and had the lowest percentage of risky sexual activity in any cluster. Fewer students reported illicit drug, tobacco and alcohol use, violence and unintentional injury when compared to the all student sample. Demographically this group contained more females than males, at 61.8% and 38.2% respectively. There were more Non-Hispanic whites and less Non-Hispanic blacks than the overall sample. The grade in school distribution was not strikingly different than the total sample.

Thrill Seekers Cluster

This was the second most prominent behavior pattern, present in 15% (n= 124) of Alabama adolescents. The thrill seeker cluster included a higher percentage of students reporting most of the risky behaviors. This group reported the highest percentage of participation in illicit drug, alcohol, and tobacco use, violence, and risky sexual activity. They also reported a higher percentage of weapon carrying, when compared to the all student group, and had the second highest percentage of unintentional injury of any behavior cluster. The percentage of students reporting poor dietary habits, limited physical activity, and excessive television watching was similar to the all student group. Demographically this group contained more males than females, 55.7% and 44.3% respectively. The percentage of Non-Hispanic whites and Non-Hispanic blacks was nearly the same as the all student sample. It is interesting to note that these students tended to be older as evidenced by fewer 9th and 10th grade students, and more 11th and 12th grades students than the all student sample.

Injury Potential Cluster

Ten percent of Alabama adolescents fell into the injury potential group (n= 82). This group included the highest percentage of students reporting weapon carrying and other behaviors that may lead to unintentional injury. Although no illicit drug use was reported by this group, when compared to the all student group, the percentages of the following behaviors were higher among students in this cluster; alcohol and tobacco use, risky sexual activity, and violence. The percentage of students who reported poor dietary intake, limited physical activity, and excessive television watching was similar to the all student group. This group had far more males than females, at 86.2% and 13.8% respectively. Similar to the poor diet/low risk taker group there were more Non-Hispanic whites and less Non-Hispanic blacks than the all student sample. Unlike the other clusters, the grade in school distribution was strikingly different than the total sample, with only 1 in 10 students reporting they were in the 12th grade.

Television Watcher/Milk Drinker Cluster

The fourth most frequent behavior pattern, noted in 9% (n= 75) of the adolescents, was identified as the television watcher/milk drinker cluster. This group had the highest percentage of students reporting excessive television watching (greater than three hours on a school night) and the lowest percentage of students reporting poor milk intake, or three servings of milk daily, of any cluster. They also reported a lower percentage of poor fruit/vegetable intake. Overall, this group had the best dietary behaviors and was the only group in which all students reported an adequate intake of milk. Risky sexual behavior and tobacco, alcohol and illicit drug use were reported less frequently by this group when compared to the all student sample. This group contained more males than females, at 65.1% and 34.9% respectively.

The group had the highest percentage of Non-Hispanic whites and the lowest percent of Non-Hispanic blacks than any other cluster. The grade in school distribution was different than the all student sample, with a higher percentage of students reporting they were in 9th grade and fewer students in 10th grade. However, the percentage of students in 11th and 12th grade was similar to the all student group.

Non-risk Taker Cluster

The least frequently observed behavior pattern contained 7.9% (n= 65) of the adolescents. This group was identified as the non-risk taker cluster because it was characterized by the lowest percentage of students reporting participation in violence, unintentional injury behaviors, excessive television watching, and illicit drug, tobacco, and alcohol use. Risky sexual activity and weapon carrying were reported less frequently by this group when compared to the all student sample. This was the only group in which 100% of the students reported a good intake of fruits and vegetable, yet 100% also reported poor/low intake of milk. Strikingly more females than males (73.5% and 26.5% respectively) belonged to this cluster. The grade in school distribution demonstrated similarities and differences from the all student sample, with a similar percentage of students in 9th and 10th grade, but more students in 11th grade, and fewer students in 12th grade. The percentages of race/ethnicity groups were similar to those of the all student sample.

Discussion

This study's findings of five distinct patterns of behaviors support the PBT by demonstrating that behaviors do co-occur and result in specific clustering of HRB and HCB reflecting a collection of syndrome like behaviors.[5,9-12] The PBT would predict that the thrill seeking cluster who reported drug, alcohol and tobacco use, would also report participation in sexual activity and violence. Findings regarding the injury potential cluster also support the PBT premise of co-occurring behaviors, with high rates of weapon carrying and behaviors that lead to unintentional injury. An example of a healthy clustering of behaviors is evident in the non-risk taker group. This cluster reported the best HRB/HCB profile of all groups, with the lowest percentage of most HRBs, the lowest or lower percents of sedentary behaviors. None reported low/poor fruit/vegetable intake, yet all reported poor milk intake.

The practicality and applicability of the study findings include the potential for public health practitioners and healthcare providers to employ the expectations of clustered behaviors in planning interventions designed to decrease HRB/HCB and to promote healthy behaviors. In the past, studies have reported the prevalence of selected HRB and risk behavior co-

occurrence, but have not included HCB in the same analyses. This study helps to explicate how investigating both HRB and HCB in the same study adds to the current understanding of the complex behavioral patterns of youth. For example the poor diet/non-risk taker cluster report the highest percentage of poor dietary habits, percents of sedentary behavior consistent with the all student population, but very few HRB. It is not surprising, given the 30% prevalence of obesity in Alabama,[23] that the largest cluster of adolescents (58%), reported the highest percentage of poor dietary habits. It is interesting to note that this is not the cluster with the highest percentage of sedentary behaviors. Although this group reports unhealthy dietary habits they have a lower percentage of HRB, perhaps providing them with some protection against health impairment.

Consideration of the implications of the findings can be based on the demographic descriptors of each group. The thrill seeker and injury potential groups both were comprised of more students in lower grades, with only 1 in 10 injury potential students in the 12th grade. A possible explanation is that youth who belong to these groups have dropped out of school by 11th or 12th grade. An alternative explanation is that students change to behaviors that are heath promoting or conventional as they age.

These cluster findings can guide development of community and school programs. Interventions for primary and secondary prevention could target younger males who carry weapons or are at risk for unintentional injury in the earlier high school grades. Interventions supporting good dietary behaviors, should also support physical activity, but may not need to include content on HRBs. Although not a new finding, the finding that more females than males are non-risk takers and more males than females are thrill seekers confirms that interventions encouraging HRB avoidance should target females, and programs to reduce risk taking directed towards males.

An important limitation of this study is that a newer data set was not available for analysis. The weighting process for the 2007 AL-YRBS resulted in an unreliable data set. The current results are representative of students attending high school in Alabama and therefore, results are limited to this population. The data are gathered on school attending youth and the clusters may be markedly different from youth who no longer attend school. Secondary data analysis does not allow the researcher to clarify answers with participants. The final sample is smaller than the original because all questions about the behaviors had to be answered in order for the student to be retained for the final sample. Truthfulness and social desirability are also issues that may alter results.

Implications of these findings for future research using PBT include investigating how HRB and HCB cluster among a national sample. This study and future research lend support to new and innovative ideas for primary and secondary intervention programs and help to justify funding decisions that may make an impact on the behavior of youth during a developmental period in their lives when unhealthy habits may be altered and health enhancing patterns can be created and supported.

References

1. World Health Organization. (2009). *Adolescent health.* Retrieved January 20, 2010 from http://www.who.int/whr/2002/annex/en/index.html.
2. World Health Organization. (2008). *10 facts on adolescent health*. Retrieved January 20, 2010 from http://www.who.int/features/factfiles/adolescent_health/en/index.html.
3. Jessor, R. (1998). *New perspectives on adolescent risk behaviors*. Cambridge, MA: Cambridge University Press.
4. Jessor, R., Graves, T. D., Hanson, R. C., & Jessor, S. L. (1968). *Society, personality, and deviant behavior: A study of a tri-ethnic community*. New York:: Holt, Rinehart & Winston.
5. Jessor, R., & Jessor, S. L. (1977). *Problem behavior and psychosocial development: A longitudinal study of youth*. New York: Academic Press.
6. Wills, T. A., Resko, J. A., Ainette, M. G., & Mendoza, D. (2004). Smoking onset in adolescence: A person-centered analysis with time-varying predictors. *Health Psychology, 23*(2), 158-167.
7. Park, H. S., Schepp, K. G., Jang, E. H., & Koo, H. Y. (2006). Predictors of suicidal ideation among high school students by gender in South Korea. *The Journal of School Health, 76*(5), 181-188.
8. Costello, D. M., Swendsen, J., Rose, J. S., & Dierker, L. C. (2008). Risk and protective factors associated with trajectories of depressed mood from adolescence to early adulthood. *Journal of Consulting and Clinical Psychology, 76*(2), 173-183.
9. Branstrom, R., Sjostrom, E., & Andreasson, S. (2007). Individual, group and community risk and protective factors for alcohol and drug use among Swedish adolescents. *European Journal of Public Health, 18*(1), 12-18.
10. Ellickson, P. L., Tucker, J. S., & Klein, D. J. (2008). Reducing early smokers' risk for future smoking and other problem behaviors: Insights from a five-year longitudinal study. *Journal of Adolescent Health, 43,* 394-400.
11. Fergusson, D. & Lynskey, M. (1996). Alcohol misuse and adolescent behaviors and risk taking. *Pediatrics, 98*(1), 91-96.

12. Strachman, A., Impett, E. A., Henson, J. M, & Pentz, M. A. (2009). Early adolescent alcohol use and sexual experience by emerging adulthood: A 10-year longitudinal investigation. *Journal of Adolescent Health, 45*(5), 478-482.
13. Weden, M. & Zabin, L. (2005). Gender and ethnic differences in the co-occurrence of adolescent risk behaviors. *Ethnicity & Health, 10*(3), 213-233.
14. Nelson, M. C., & Gordon-Larson, P. (2006). Physical activity and sedentary behavior patterns are associated with selected adolescent health risk behaviors. *Pediatrics, 117*(4):1281-1290.
15. Centers for Disease Control and Prevention. (1991). *1991 National school-based youth risk behavior survey data documentation manual*. Retrieved March 18, 2010 from http://www.cdc.gov/HealthyYouth/yrbs/data/1991_2005_index.htm.
16. Kolbe, L. J., Kann, L., & Collins, J. L. (1993). Overview of the Youth Risk Behavior Surveillance System. *Public Health Reports, 108*, 2-11.
17. Brener, N. D., Kann, L., Kinchen, S. A., Grunbaum, J. A., Whalen, L., Eaton, D., et al. (2004). Methodology of the Youth Risk Behavior Surveillance System. *Morbidity and Mortality Weekly Report, 53*(12), 1-12.
18. Brener, N. D., Billy, J. O. G., & Grady, W. R. (2003). Assessment of factors affecting the validity of self-reported health-risk behavior among adolescents: evidence from the scientific literature. *Journal of Adolescent Health, 33*(6), 436-457.
19. Lauritsen, J. L., Swicegood, C. G. (1997). The consistency of self-reported initiation of sexual activity. *Family Planning Perspectives, 29*, 215-21.
20. Centers for Disease Control and Prevention. (2006). Youth Risk Behavior Surveillance-United States, 2005. Surveillance Summaries. *MMWR* 2006, 55 (No. SS-5). Retrieved October 18, 2010 from http://www.cdc.gov/mmwr/pdf/ss/ss5505.pdf.
21. Johnson, D. E. (1998). *Applied multivariate methods for data analysis*. Pacific Grove, CA: Duxbury Press.
22. Shah, B. V., Barnwell, B. G., & Biegler, G. S. (1997). *SUDAAN user's manual, release 7.5*. Research Triangle Park, NC: Research Triangle Institute.
23. Center for Disease Control and Prevention. (2009). Overweight and obesity: U.S. obesity trends. Retrieved February 12, 2010 from http://www.cdc.gov/obesity/data/trends.html#State.

Table 1. Table of 2005 AL-YRBS Selected Questions

Behavior		
Question	Code and Label	Recode
Current Sexual Activity: (Q60) During the past 3 months, with how many people did you have sexual intercourse?	1) I have never had sexual intercourse 2) I have had sexual intercourse, but not during the past 3 months 3) 1 person 4) 2 people 5) 3 people 6) 4 people 7) 5 people 8) 6 or more people	1) None 2) One or more people
Current Illicit Drug Use: (Q46) During the past 30 days, how many times did you use marijuana?	1) 0 times 2) 1 or 2 times 3) 3 to 9 times 4) 10 to 19 times 5) 20 to 39 times 6) 40 or 2more	1) Not using 2) Current use

	times	
Current Illicit Drug Use: (Q49) During the past 30 days, how many times did you use any form of cocaine, including powder, crack, or freebase?	1) 0 times 2) 1 or 2 times 3) 3 to 9 times 4) 10 to 19 times 5) 20 to 39 times 6) 40 or more times	1) Not using 2) Current use
Current Tobacco Use: (Q30) During the past 30 days, on how many days did you smoke cigarettes?	1) 0 days 2) 1 or 2 days 3) 3 to 5 days 4) 6 to 9 days 5) 10 to 19 days 6) 20 or 29 days 7) All 30 days	1) Not using 2) Current use
Current Tobacco Use: (Q36) During the past 30 days, on how many days did you use chewing tobacco, snuff, or dip, such as Redman, Levi, Garrett, Beechnut, Skoal Bandits, or Copenhagen?	1) 0 days 2) 1 or 2 days 3) 3 to 5 days 4) 6 to 9 days 5) 10 to 19 days 6) 20 or 29 days	1) Not using 2) Current use

	7) All 30 days	
Current Tobacco Use: (Q38) During the past 30 days, on how many days did you smoke cigars, cigarillos, or little cigars?	1) 0 days 2) 1 or 2 days 3) 3 to 5 days 4) 6 to 9 days 5) 10 to 19 days 6) 20 or 29 days 7) All 30 days	1) Not using 2) Current use
Current Alcohol Use: (Q41) During the past 30 days, on how many days did you have at least one drink of alcohol?	1) 0 days 2) 1 or 2 days 3) 3 to 5 days 4) 6 to 9 days 5) 10 to 19 days 6) 20 or 29 days 7) All 30 days	1) Not using 2) Current use
Current Alcohol Use: (Q42) During the past 30 days, on how many days did you have 5 or more drinks of alcohol in a row, that is, within a couple of hours?	1) 0 days 2) 1 or 2 days 3) 3 to 5 days 4) 6 to 9 days 5) 10 to 19 days	1) Not using 2) Current use

	6) 20 or 29 days 7) All 30 days	
Weapon Carrying: (Q12) During the past 30 days, on how many days did you carry a weapon such as a gun, knife, or club?	1) 0 days 2) 1 day 3) 2 to 3 days 4) 4 to 5 days 5) 6 or more days	1) Not using 2) Current use
Violence: (Q18) During the past 12 months, how many times were you in a physical fight?	1) 0 times 2) 1 time 3) 2 to 3 times 4) 4 to 5 times 5) 6 to 7 times 6) 8 or 9 times 7) 10 or 11 times 8) 12 or more times	1) Not using 2) Current use
Unintentional Injury: (Q8) When you rode a bicycle during the past 12 months, how often did you wear a helmet?	1) I did not ride a bicycle during the past 12 months 2) Never wore a helmet	1) Wore helmet 2) Never or rarely wore a helmet

	3) Rarely wore a helmet 4) Sometimes wore a helmet 5) Most of the time wore a helmet 6) Always wore a helmet	
Unintentional Injury: (Q9) How often do you wear a seat belt when riding in a car driven by someone else?	1) Never 2) Rarely 3) Sometimes 4) Most of the time 5) Always	1) Wore seat belt 2) Never or rarely wore seat belt
Unintentional Injury: (Q11) During the past 30 days, how many times did you drive a car or other vehicle when you had been drinking alcohol?	1) 0 times 2) 1 time 3) 2 to 3 times 4) 4 to 5 times 5) 6 or more times	1) Did not drive 2) Drove
Poor Dietary Habits: (QN77) Percentage of students who drank three or more glasses per	1) Yes 2) No	1) Did drink 2) Did not drink

day of milk during the past seven days.		
Poor Dietary Habits: (QNFRVG) Percentage of students who ate five or more servings per day of fruits and vegetables during the past seven days.	1) Yes 2) No	1) Did eat 2) Did not eat
Sedentary Behaviors: (QN80) Percentage of students who were physically active for total of 60 minutes or more per day on five days or more of the past seven days.	1) Yes 2) No	1) Did have 60 minutes 2) Did not have 60 minutes
Sedentary Behaviors: (QN81) Percentage of students who watched three or more hours per day of TV on an average school day.	1) Yes 2) No	1) Did have 3 hours 2) Did not have 3 hours

Table 2. Percentage of Health Risk and Health Compromising Behaviors Among Alabama Students by Cluster Group

	All Students N=827	Poor diet /non-risk takers	Thrill seekers N= 124	Injury potential N= 82	Television watchers /milk drinkers N= 75	Non-risk takers N= 65

		N= 481				
Health Risk Behavior	% (SE)					
Current Sexual Activity	35.0 (3.1)	25.2 (2.8)	72.0 (5.4)	39.3 (6.0)	27.7 (6.4)	32.3 (6.7)
Current Illicit Drug Use	16.6 (1.7)	0.3 (0.3)	99.0 (1.0)	0.0 (0.0)	3.5 (2.3)	0.0 (0.0)
Current Tobacco Use	29.4 (2.1)	17.2 (2.0)	75.3 (5.3)	43.0 (5.3)	21.1 (4.6)	14.5 (4.1)
Current Alcohol Use	38.1 (2.4)	27.8 (2.9)	85.0 (2.7)	39.9 (6.4)	27.0 (6.2)	25.7 (6.2)
Weapon Carrying	17.0 (1.9)	0.0 (0.0)	28.3 (2.6)	98.8 (1.2)	24.8 (6.2)	6.3 (2.9)
Violence	25.8 (2.2)	16.8 (2.4)	50.1 (5.6)	45.0 (7.0)	28.4 (5.8)	15.2 (6.5)
Unintentional Injury	58.9 (2.7)	52.4 (3.1)	76.7 (4.6)	79.9 (5.1)	59.1 (6.5)	42.7 (7.5)
Health Compromising Behavior						
Poor Dietary Habits						
Low/Poor Fruit/Vegetable Intake	86.1 (1.7)	100.0 (0.0)	80.6 (4.4)	92.7 (2.8)	76.9 (6.0)	0.0 (0.0)
Low/Poor Milk Intake	90.8 (1.0)	100.0 (0.0)	95.9 (1.6)	100.0 (0.0)	0.0 (0.0)	100.0 (0.0)
Sedentary Behaviors						

Low Physical Activity	64.6 (2.4)	68.6 (3.2)	67.6 (4.3)	63.2 (5.1)	42.5 (5.5)	51.3 (6.2)
Excessive Television Use	39.8 (2.4)	37.8 (2.5)	44.0 (5.9)	41.1 (5.5)	49.0 (6.0)	34.4 (9.3)

Table 3. Demographic Percentages of Alabama Students by Cluster

	All Students N=827	Poor diet /non-risk takers N= 481	Thrill seekers N= 124	Injury potential N= 82	Television watchers /milk drinkers N= 75	Non-risk takers N= 65
	% (SE)					
Sex						
Female	50.2 (2.2)	61.8 (2.5)	44.3 (5.3)	13.8 (4.7)	34.9 (4.8)	73.5 (6.0)
Male	49.8 (2.2)	38.2 (2.5)	55.7 (5.3)	86.2 (4.7)	65.1 (4.8)	26.5 (6.0)
Race/Ethnicity						
Hispanic	1.2 (0.3)	1.0 (0.3)	0.6 (0.4)	1.0 (0.7)	2.4 (1.6)	1.4 (1.0)
Non-Hispanic	35.4 (6.0)	26.4 (5.9)	34.5 (9.7)	25.1 (6.8)	14.7 (6.0)	36.6 (11.5)
Black	60.9 (5.8)	70.7 (5.9)	62.7 (9.5)	72.2 (6.7)	79.7 (5.4)	58.4 (10.9)
Non-Hispanic	2.6 (0.4)	1.9 (0.5)	2.3 (1.0)	1.7 (1.0)	3.3 (1.4)	3.6 (1.7)
White						
Other						

Grade in						
School	31.2 (5.1)	30.8 (5.5)	24.8 (6.9)	35.8 (9.6)	36.0 (9.9)	30.4 (9.1)
9th	25.3 (4.5)	26.4 (5.2)	15.2 (5.3)	27.9 (5.1)	19.1 (5.9)	26.7 (7.7)
10th	22.8 (4.2)	18.5 (3.9)	29.0 (8.0)	26.9 (7.4)	24.5 (7.4)	28.4 (8.6)
1th	20.8 (3.8)	24.4 (4.9)	31.1 (6.8)	9.4 (4.2)	20.5 (5.5)	14.6 (4.1)
12th						