

BOSTON UNIVERSITY
SCHOOL OF PUBLIC HEALTH

Dissertation

**EXAMINING PREDICTORS OF UNDERGRADUATE ENGAGEMENT
IN ONLINE HEALTH EDUCATION**

by

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Submitted in partial fulfillment of the

requirements for the degree of

Doctor of Public Health

2011

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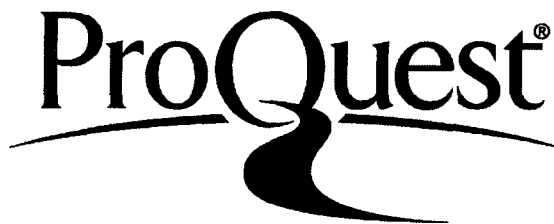
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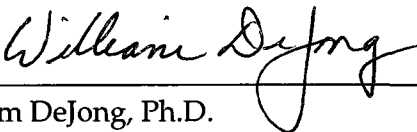
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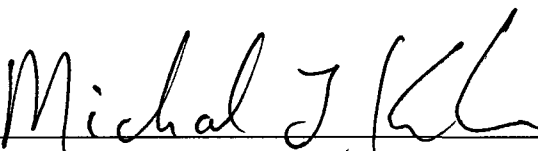
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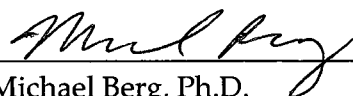
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DEDICATION

To the many college health advocates who dedicate themselves to student safety and empowerment.

ACKNOWLEDGEMENTS

I acknowledge my dissertation committee for their efforts on my behalf. Thanks to Dr. Deb Bowen, Dr. Mike Berg, and Dr. Mike Kahn: your individual and collective support allowed me to reach my potential in this extraordinary process. I am grateful to Dr. Judith Bernstein for her powerful instruction, insight, and guidance; your Research Methods class sparked this dissertation topic and fed my love for research. While my time with you was frustratingly limited, you are a significant part of my professional compass. A special note of gratitude to my chairperson, Dr. Bill DeJong, whose generous commitment to me as a student and professional has stretched and comforted me. You are the consummate teacher and mentor. Thank you for your sharp wit, keen intellect, and kind heart. You helped make this journey everything I hoped it would be. Thanks to Bonnie Andrews, my statistics coach, who guided me through my significant quantitative challenges with skill, patience, and boundless good cheer. Thanks also to my focus group team, Dianne Alksninis and Julie Andrade, your professionalism and communication talents were essential to this study's qualitative success.

I extend my gratitude to the many students, staff, and faculty at Wheaton College, who lent their expertise and support in countless ways to enable my study to succeed. Thank you to Dean Sue Alexander, who supported me throughout my course work and the early study stages. I am grateful to Dean Lee Burdette Williams, who actively supported this research to its finish and continues to believe in me as an administrator and nascent academic. I also acknowledge my student affairs colleagues

Cynthia Maricle, Jack Kuszaj, Alex Vasquez, Claudia Bell, Vereene Parnell, Martha Lamb, Chad Yowell, Andrea Holden, Kate McCaffrey, and David Tiscione, whose hard work and dedication to students inspire me to be my best.

To my beloved wife, Julie, I thank you for wrapping me in your warm love and encouragement, even when I resisted. Your unconditional support, guidance, and bottomless understanding made this possible. I can never thank you enough. I became a better man the day I met you and look forward to spending many post-dissertation days growing and basking in your glow. I love you with all my heart. To my daughter Chloe, my son Cole, my Nana, and my brothers Mark, Derrick, and Aaron, thank you for your unwavering love. To John Cashman, my intrepid sidekick, thank you for your ever-present friendship. And last but by no means least, to my mother, who I miss dearly. Thank you for convincing me that I can go as far as I want to go.

**EXAMINING PREDICTORS OF UNDERGRADUATE ENGAGEMENT
IN ONLINE HEALTH EDUCATION**

(Order No.)

CRAIG STEVEN ANDRADE

Boston University School of Public Health, 2011

Major Professor: William DeJong, Ph.D., Professor of Community Health Sciences

ABSTRACT

Introduction: How college undergraduates manage challenges with alcohol, drugs, tobacco, sex, stress, sleep, exercise, and diet can shape their current and future health habits and status. Health risk behaviors can result in outcomes that damage lives, threaten individual academic success, and jeopardize college retention. Online health education (e-Health) is an emerging intervention modality that offers cost-effective mass delivery of health information, with the potential for broad benefits. Questions remain regarding levels of student engagement with e-Health programs and the influence of demographic and personality traits on engagement.

The purpose of this dissertation is to identify effective methods for measuring undergraduate engagement with health education websites and to assess differential website engagement and associated student characteristics.

Methods: This study used a multi-method design involving all class years of full- and part-time students (18-24 years) at Wheaton College in Norton, Massachusetts. One hundred thirty-eight of the original 209 study volunteers completed the baseline survey,

accessed the study website, MyStudentBody (MSB), during the nine-week viewing period, and completed the post-engagement survey. Major categories of measurement included baseline measures of sociodemographic and psychobehavioral characteristics (predictor variables) and subsequent measures of website engagement including MSB utilization tracking data, and website engagement surveys (outcome variables). Cohorts of study and non-study students participated in post-study focus group discussions.

Results: Findings showed rapidly declining website engagement over the nine-week access period and significant student non-engagement overall, despite regular use of incentive offers and email prompts. Quantitative findings showed no significant statistical associations between predictor and outcome measures. Qualitative data presented recurrent themes including factors that discouraged and encouraged participant e-Health program use.

Conclusion: Further study is necessary to examine the potential predictors of undergraduate engagement in online health education. Study focus groups revealed patterns of student behaviors, beliefs, and preferences that can help explain content avoidance and point to student-centered strategies that can improve engagement in MSB and similar e-Health products.

TABLE OF CONTENTS

DEDICATION	IV
ACKNOWLEDGEMENTS	V
ABSTRACT	VII
LIST OF TABLES.....	XII
LIST OF FIGURES	XIV
CHAPTER I.....	1
INTRODUCTION.....	1
FACTORS INFLUENCING STUDENT HEALTH BEHAVIORS.....	3
STUDENT HEALTH RISK BEHAVIORS AND CONSEQUENCES.....	8
UNDERSTANDING HEALTH RISK BEHAVIORS... ..	17
HEALTH RISK BEHAVIOR INTERVENTIONS.....	21
COMPUTER AND INTERNET-BASED HEALTH EDUCATION.....	26
SUMMARY.....	34
CHAPTER II.....	35
LITERATURE REVIEW	35
INTRODUCTION	35
DEFINING STUDENT ENGAGEMENT THROUGH MULTIPLE LENSES	35
E-HEALTH ENGAGEMENT DEFINED	44
E-HEALTH ENGAGEMENT BEHAVIOR.....	46
MODEL OF UNDERGRADUATE E-HEALTH INFORMATION BEHAVIOR.....	46
CONTEXT OF INFORMATION NEED	46
MOTIVATING CATALYSTS	48
MODERATING VARIABLES	50

MEDIATING VARIABLES.....	57
INFORMATION-SEEKING BEHAVIOR.....	61
INFORMATION PROCESSING AND USE.....	62
SUMMARY.....	63
CHAPTER III	65
METHODS.....	65
STUDY DESIGN AND OVERVIEW	65
STUDY SITE	68
ROLE OF THE RESEARCHER.....	68
STUDY SAMPLE.....	70
RECRUITMENT, INCENTIVES, AND ENGAGEMENT BOOSTERS.....	71
MYSTUDENTBODY.COM	73
QUANTITATIVE MEASURES.....	74
QUALITATIVE MEASURES	79
QUALITATIVE ANALYSIS.....	80
CHAPTER IV	93
FINDINGS	93
INTRODUCTION	93
PARTICIPANT ENROLLMENT	93
QUANTITATIVE MEASURES.....	94
QUALITATIVE MEASURES	128
CHAPTER V.....	155
DISCUSSION, IMPLICATIONS, AND CONCLUSIONS.....	155

INTRODUCTION	155
STUDY OVERVIEW	155
DISCUSSION OF QUANTITATIVE FINDINGS.....	156
NATURAL STUDENT ENGAGEMENT	157
HIGH NON-ENGAGEMENT	158
LITERATURE CONSIDERATIONS	160
WHAT STUDENTS SAID ABOUT LOW ENGAGEMENT.....	164
E-HEALTH'S COMPETITION.....	165
BENCHMARKS AND WEB ANALYTICS NEEDED.....	166
UNCOVERING POSSIBLE ASSOCIATIONS.....	167
DISCUSSION OF QUALITATIVE FINDINGS	170
PRACTICAL IMPLICATIONS AND RECOMMENDATIONS.....	181
RESEARCH IMPLICATIONS.....	188
LIMITATIONS OF THE STUDY.....	189
CONCLUSIONS.....	191
APPENDIX A	194
APPENDIX B.....	195
APPENDIX C	205
APPENDIX D.....	217
APPENDIX E.....	225
APPENDIX F.....	256
REFERENCES	274
CURRICULUM VITAE.....	297

LIST OF TABLES

Table	Page
1. Wheaton College: Student demographic profile.....	68
2. Qualitative analysis codes.....	82
3. Predictor variables.....	84 – 86
4. Outcome variables.....	86 – 89
5. Comparative analysis: Q6 vs. frequency of visiting other modules.....	90
6. Comparative analysis: Q15 vs. listed variables.....	90 – 91
7. CHIS study completers' demographics and Wheaton College: student demographics.....	102
8. CHIS study completers' demographics and CHIS non-completers' demographics.....	103
9. Comparing study completers and non-completers by sexual orientation.....	106
10. Comparing study completers and non-completers by perceived general health.....	107
11. Univariate summary of scored depression level HANDS scores.....	108
12. Univariate summary of general anxiety disorder (GAD) level by Carroll-Davidson GAD Screen.....	108
13. Univariate summary of internal and chance health locus of control MHLC scales.....	109

14.	Univariate summary of self-monitoring scores by Self-Monitoring Scale.....	110
15.	Univariate summary of personality traits scores Ten-point Personality Inventory (TIPI) scale.....	110
16.	Comparative analysis: Q3 and priority predictors.....	122
17.	Variable Q6: As you spent time on MSB, how often did you visit MSB-Alcohol?.....	123
18.	Cross-tabulation of TIPI conscientious score and reported frequency of visiting MSB-Alcohol.....	124
19.	Variable: Q15: How relevant to your life is the health information on MSB?.....	125
20.	Cross-tabulation of response variable: Perceived mental health and perceived MSB content relevance.....	126
21.	Cross-tabulation of response variables: TIPI agreeableness score and perceived content relevance.....	127
22.	Cross-tabulation of response variables: TIPI openness to experience and perceived MSB content relevance.....	128
23.	Focus group participant profiles.....	132

LIST OF FIGURES

Figure	Page
1. Conceptual model of undergraduate e-Health information behavior.....	47
2. Study component diagram.....	66
3. Study timetable.....	67
4. Number of student visits to MSB-Alcohol by sex.....	95
5. Number of student visits to MSB-Alcohol by class year.....	95
6. Number of student visits to MSB-Alcohol by intercollegiate athletic involvement.....	96
7. Number of student visits to MSB-Drug by sex.....	96
8. Number of student visits to MSB-Drug by class year.....	97
9. Number of student visits to MSB-Drug by intercollegiate athletic involvement.....	97
10. Number of student visits to MSB-Alcohol by hour.....	98
11. Number of student visits to MSB-Drug by hour.....	99
12. Number of student visits to MSB-Alcohol by date.....	99

13.	Number of student visits to MSB-Drug by date.....	100
14.	Number of student return visits to MSB-Alcohol.....	100
15.	Number of student return visits to MSB-Drug.....	101
16.	Response: What is the best estimate of your family income?.....	104
17.	Response: How would you describe your general health?.....	104
18.	Response: How would you describe your overall physical health?.....	105
19.	Response: How would you describe your overall mental health?.....	105
20.	Response: On average how many times per week did you visit MSB?.....	112
21.	Response: How long was your average individual session on MSB in minutes?.....	112
22.	Response: Did you complete the MSB-Alcohol course?.....	113
23.	Response: Did you complete the MSB-Drug course?.....	113
24.	Response: As you spent time on MSB, how often did you visit the following site areas?.....	114
25.	Response: How would you rate the overall quality of the information on each of the following modules?.....	115

26.	Response: How relevant to your life is the health information on MSB?.....	116
27.	Response: How frequently did you revisit MSB information that was interesting or useful?.....	117
28.	Response: How frequently did what you learned from MSB cause you to seek information elsewhere?.....	117
29.	Response: How likely are you to join a health-related group or cause as a result of a new interest or concern raised by MSB?.....	118
30.	Response: How frequently have you discussed specific MSB information with other people?.....	118
31.	Response: To what extent will the information you learned on MSB help you:.....	119
32.	To what extent did MSB increase your knowledge of:.....	120
33.	Diagrams of focus group’s positive and negative comments regarding e-Health modalities.....	133
34.	Diagram of focus group’s perceived barriers to health website use.....	135
35.	Focus group: MSB-experienced: What I liked most.....	139
36.	Focus group: MSB-experienced: What I liked least about.....	140

37.	Focus group: MSB change recommendations from popular website features.....	145
38.	Tag cloud of engagement language.....	151
39.	Tag cloud of non-engagement language.....	153

Chapter I

INTRODUCTION

Introduction

How college undergraduates manage challenges with alcohol, drugs, tobacco, sex, stress, sleep, exercise, and diet can shape their current and future health habits and status.¹⁻³ Health risk behaviors can result in outcomes that damage lives, threaten individual academic success, and jeopardize college retention.¹⁻⁷

According to the National College Health Risk Behavior Survey, more than half of students in four-year institutions report receiving information from their college or university on sexually transmitted diseases, AIDS/HIV, and alcohol and other drugs.¹ A national health objective from *Healthy Campus 2010* is to increase the proportion of students who receive health-protective information from their college or university.⁸ Traditional college interventions (e.g., presentations, workshops, adjudication, and individual counseling) require significant investments, but have questionable reach and effectiveness,^{2,9-11} so despite diverse efforts, rates of depression, heavy drinking, illicit drug use, sexually transmitted diseases, smoking, and disordered eating among college undergraduates continue to raise major concern.^{1,2,5-7}

Computer and internet-based health education is an emerging intervention modality that offers cost-effective mass delivery of health information, with the potential to create broad change and benefit.¹²⁻¹⁷ Questions remain regarding levels of student

engagement with electronically presented health information and the influence of demographic and personality traits on engagement. There is limited research about whether, how, and why different students use or avoid online health programs. An analysis of student engagement and the factors that influence student use of health information can inform efforts to improve health education websites and online courses and to develop alternatives for students with different needs and preferences. Ultimately, findings that emerge from this research can enhance student health, retention in school, and academic success.

Dissertation Objectives

There are four study objectives: 1) Identify effective methods for assessing student engagement with MSB. 2) Identify student characteristics and predisposing factors that influence undergraduate engagement with MSB. 3) Examine whether use of activity logs influences website engagement. 4) Develop recommendations for tailoring web-based health information delivery systems to improve student engagement and for creating alternatives for students who find MSB less engaging or useful.

Background and Significance

According to the U.S. Department of Education, 17.8 million students attended over 4,300 U.S. colleges and universities in 2006, 85% of whom were enrolled in undergraduate programs.^{18,19} The demographic profile of U.S. college undergraduates is increasingly more diverse in terms of age, sex and sexual identity, religion, race/ethnicity, family income, and mental and physical health. All of these variables can

influence the decisions that students make about health-related behaviors.^{2,5,19,20}

Factors Influencing Student Health Behaviors

Literature on demographic subgroup differences regarding health behaviors in general, and for college students in particular, focus almost exclusively on sex and race/ethnicity. There is new and growing attention focused on mental health and spirituality as they relate to college students and health behaviors. The research data that follows highlights the differential impact demographic factors have on health risk behaviors. This information informed my considerations for measures and potential predictors of student engagement in online health education.

Sex

There is significant documentation on the influence of sex on health behaviors. For example, according to the 1995 National College Health Risk Behavior Survey (NCHRBS), male students were more likely than females to report rarely or never wearing a seatbelt; drinking alcohol while driving; frequent alcohol use and episodic heavy drinking; combined alcohol and illegal drug use; substance use during last sexual intercourse; having six or more sex partners in their lifetime; smoking cigarettes or using smokeless tobacco; carrying a weapon or gun; and physical fighting. By contrast, female respondents were more likely than males to report ever being forced to have sexual intercourse against their will; not using a condom at last sexual intercourse or using condoms inconsistently; thinking they were overweight; and dieting, exercising, vomiting, taking laxatives, or taking diet pills to lose weight or to keep from gaining

weight.¹

Pampalone, Zavela, and Cost assessed various health-related behaviors of 819 undergraduates at a northern Colorado university using the International Survey of Personal Health Behaviors. They found that women reported having participated in healthier behaviors than men in terms of eating habits, tobacco and alcohol abstinence, dental care, sun protection, and driving behavior. Male participants reported exercising more frequently, consuming more alcohol in one sitting, and eating significantly more red meat than females.²¹ The different ways that women and men act to promote, risk, or harm their health make sex an important predictor variable to consider for my study.

Race/Ethnicity

The National College Health Risk Behavior Survey identified differences in the prevalence of student health risk behaviors according to race and ethnicity. White students report more frequent alcohol use; frequent episodic heavy drinking; and combined alcohol and illegal drug use compared to black and Hispanic students. Black students were more likely than both whites and Hispanics to report having six or more sex partners during their lifetime; having ever been pregnant; and being overweight. Black students were more likely than whites to report attempting suicide. Hispanic students were more likely than whites to report nonconsensual sexual intercourse at age less than 13 years and not using birth control pills or contraception at last sexual intercourse. In addition, Hispanic students were more likely than black students to report drinking alcohol and driving; episodic heavy drinking; lifetime cocaine and other

illegal drug use; and failing to use a condom at last sexual intercourse and inconsistent condom use.¹

In a study examining the relationship between race and ethnicity, acculturation, and health behaviors, Despues and Friedman surveyed 521 university students regarding their healthy and unhealthy eating habits, preventative health behaviors, and health-harming behaviors. Results showed that despite comparable educational achievement, there were group differences in health behaviors among particular racial/ethnic groups. For instance, after controlling for parental income, Asian Americans were less likely than European Americans to report getting physical exams, exercising, going to the dentist, and eating fruit or salads. Acculturation had both negative and positive effects on participants' health behaviors. For example, for Hispanic Americans and Asian Americans, high acculturation (i.e., adoption of the surrounding culture's patterns of beliefs, attitudes, values, customs, and behaviors) was associated with drinking alcohol and getting physical examinations.²² The potential relationships between health behaviors and race and ethnicity may also influence students' perceptions and use of related online health information. Consequently, the variables of race and ethnicity are worthy candidates for predictors of e-Health engagement.

Mental Health Status

There is evidence that an individual's mental health status significantly impacts health-related behaviors, particularly regarding substance abuse. According to the

National Institute of Mental Health, each year, approximately 26.2 percent of U.S. residents 18 years and older suffer from a diagnosable mental disorder.²³ Of the 80,121 college students responding to the spring 2008 National College Health Assessment, 21.4% reported feeling hopeless in the last year, 19.4% reported feeling overwhelmed, 15.5% said they felt so depressed that it was difficult to function, 19.8% reported feeling overwhelmingly anxious, and 1.7% reported seriously considering suicide.²⁴ A report by the National Center on Addiction and Substance Abuse (CASA) found that 12% of college students report a depression diagnosis and 6% an anxiety diagnosis.

Regarding mental health consequences, the same CASA report found that students diagnosed with depression are more likely than those not diagnosed to have abused prescription drugs (17.9% vs. 12.5%); ever used marijuana (42.3% vs. 33.3%); used other illicit drugs (9.2% vs. 6.3%); and be current cigarette smokers (26.2% vs. 18.9%).²⁵ Finally, Weitzman studied patterns of poor mental health and depression (PMHD) and associated alcohol behaviors by surveying 27,409 college students from 119 U.S. colleges. She found that 4.8% of respondents reported poor mental health or depression and that students with PMHD were more likely to report frequent heavy drinking and drinking to get drunk compared to those not reporting PMHD.²⁶

Differences between these studies' data regarding self-reported depression symptoms and diagnosis reflect variations in study date, sampling methods, sample size, and survey methods. For example, self-reported depression symptoms presented in the 2008 National College Health Assessment came from surveys completed by a self-

selected mix of over 80,000 students (including graduate and undergraduate students) from a non-randomized sample of 106 schools which disproportionately represented various U.S. regions. The CASA report presented self-reported depression diagnosis data gathered in 2004 and 2005 from 2,000 telephone surveys from a representative sample of students from four-year undergraduate programs that equally represented all regions of the country. By contrast, Weitzman's self-reported depression diagnosis data came from a 1997 and 1999 dataset from a randomized sample of over 27,000 students from around the country. Still, despite these methodological differences, these data present a clear picture of the prevalence of mental health challenges among college students and the relationship of poor mental health and negative health behaviors. Ultimately, mental health is a relevant variable for my study.

Spirituality

Nagel and Sgoutas-Emch examined the relationship between spirituality, health beliefs, and health behaviors among 364 college students in southern California. Results showed that individuals with higher spirituality scores were more active and held more positive health beliefs than those with low spirituality scores, and that those with high spirituality scores were more likely to believe that the supernatural was more influential in a person becoming sick and recovering from illness. There were some gender differences regarding certain beliefs and health behaviors. In particular, more male than female respondents believed their health was a consequence of fate and not personal choices. Individuals who believed that fate rather than lifestyle influenced health

exhibited more health risk behaviors such as tobacco and excessive alcohol consumption.²⁷

Student Health Risk Behaviors and Consequences

Lupton defines health risk behaviors as involving "...actions and related attitudes and perceptions that contribute to people's propensity to engage in, or avoid, activities that have been deemed by experts to be hazardous or dangerous to their health."²⁸ Health risk behaviors among college undergraduates take various forms.

Alcohol

Heavy drinking is a chronic public health issue among undergraduates that results in significant harm including death. Heavy episodic (or "binge") drinking is more prevalent among college students than non-students of the same age.²⁹ Wechsler defined binge drinking as equaling five or more drinks in a row for men and four or more for women at least once during the last two week period.

A review of multiple national surveys on college drinking (i.e., the Harvard School of Public Health College Alcohol Study [CAS], 1993-2001; the National College Health Risk Behavior Survey, 1995; the CORE Alcohol and Drug Survey, 1998; and the National Survey on Drug Use and Health, 2006) found consistent heavy drinking rates of approximately two in five students between 1993-2001.³⁰⁻³⁴ According to CAS surveys, among drinkers, 48% reported that drinking to get drunk was an important reason for drinking.³⁴ Heavy drinkers consumed 91% of the alcohol reportedly consumed by CAS students, and 68% of alcohol was consumed by frequent heavy drinkers.³⁵ It is important

to note that the studies cited in this section define heavy (“binge”) drinking according to volume consumed (i.e., four or more drinks for females, five or more drinks for males), which is a controversial definition. The National Institute on Alcohol Abuse and Alcoholism (NIAAA) definitions¹ are now widely accepted as the standard.^{36,37}

The consequences of alcohol abuse include poor academic performance, forgetting or regretting recent actions, unprotected sex, fighting, sexual assault, vehicular accidents, physical injury, and death.^{1,5,7,38-40} There is also significant evidence that student misuse of alcohol is associated with other health risk behaviors. For example, Baskin-Sommers and Sommers examined the co-occurrence of alcohol and other substance use and eight other high-risk behaviors (weapons-carrying, assault, partner violence, self-harm, multiple sexual partners, condom use, seatbelt use, and speeding) by surveying 243 students from three universities in Los Angeles. Results showed that 25.0% of respondents reported committing at least one act of violence during the study period. And among those who were sexually active during the study, 62.4% reported multiple sexual partners and 35.1% reported not using a condom at least once. Correlational analysis indicated that alcohol use was significantly associated with not using condoms, partner violence, and assault.⁴¹

¹ The National Institute of Alcohol Abuse and Alcoholism (NIAAA) defines binge drinking as a “pattern of drinking that brings a person’s blood alcohol concentration (BAC) to 0.08 grams percent or above,” which for the average adult generally occurs when males consume five drinks or more and women consume four or more drinks in about two hours.

Other Drugs

Students participating in the spring 2009 National College Health Assessment (n=87,105) reported their drug use during the last 30 days for the categories of marijuana and all other drugs. A total of 15.0% (18.5% males, 13.1% females) reported using marijuana in the last 30 days. The NCHA survey question about other drug use lists cocaine, methamphetamine, other amphetamines, sedatives, hallucinogens, anabolic steroids, opiates, inhalants, MDMA (i.e., ecstasy or "E"), and other club drugs (excluding alcohol, cigarettes, tobacco from a water pipe, and marijuana). Over 23% of the respondents (13.9% males and 9.5% females) reported using at least one of these drugs in the last 30 days.²⁴ Of the students responding to the 2001 CAS survey, 14.4% reported using some form of cocaine in their lifetime; 9.0% reported using an inhalant to get high (i.e., sniffed glue, breathed the contents of an aerosol spray can, or inhaled paint or sprays); and 20.5% reported using other illegal drugs during their lifetime (i.e., LSD, PCP, ecstasy, mushrooms, speed, ice, or heroin).³⁴

The misuse of prescription medications is a growing concern. A total of 14.7% (15.8% males, 14.0% females) of 2009 National College Health Assessment respondents reported using within the last 12 months one or more prescription drugs that were not prescribed to them (including antidepressants, erectile dysfunction drugs, pain killers, sedatives, and stimulants).²⁴ A 2007 report by Columbia University's National Center on Addiction and Substance Abuse (CASA) found that between 1993 and 2005 there was a 342.9 % increase in the proportion of students reporting abuse of opioids like Percocet,

Vicodin, and OxyContin in the past month (3.1%, up from 0.7%); a 93.3% rise in those using stimulants such as Ritalin and Adderall (2.9%, up from 1.5%); and a 450.0% increase in students abusing prescription tranquilizers such as Xanax and Valium (2.2%, up from 0.4%).²⁵ The harmful consequences of misuse of illegal and prescription drugs include unintentional injury or death, fights, sexual assault, rape and other violence, exposure to sexually transmitted diseases (STDs), property damage and vandalism, and diminished academic performance and standing.²⁵

Tobacco

Tobacco kills more U.S. residents annually than alcohol, cocaine, heroin, homicide, suicide, car accidents, fire, and AIDS combined.⁴²⁻⁴⁵ Cigarette smoking rates are rising for young adults (18-24) but falling for all other age groups.^{46,47} A closer look at various aspects of smoking prevalence among college students offers a mixed picture. The University of Michigan's *Monitoring the Future* study examined smoking trends of students (18-24) from 1993 to 2005. Almost 39.0% of college students reported smoking cigarettes in the past year in 1993, compared to 36.0% in 2005. Reported daily smoking rates were 15.2% in 1993 and 12.4% in 2005, and daily heavy smoking rates were 8.9% in 1993 and 6.7% in 2005.⁴⁸ While these data appear encouraging, data on current smokers (past month) showed that there has not been significant improvement in current smoking rates since 1993.⁴⁸ Importantly, a recent CDC report noted that the rate of smoking decline among high school students (many of whom are prospective college students) slowed between 2003 and 2009 according to the national Youth Risk Behavior

Survey.⁴⁹ At the same time, 18-24 year-olds are the youngest legal targets of aggressive tobacco industry marketing.⁵⁰

There is significant documentation regarding the health consequences of smoking tobacco and using smokeless tobacco products. According to the latest Surgeon General's Report, smoking harms nearly every organ of the body and causes heart disease, cancer, and respiratory disease in smokers, while secondhand smoke (i.e., environmental exposure) increases the risk of heart disease, respiratory disease, and lung cancer for nonsmokers.⁵¹ The CDC suggests that since most daily smokers began smoking before 18 years of age, prevention and interventions that target college-age adults is an important public health strategy.⁵² The significant evidence of the prevalence of smoking among college students and its damaging costs suggest the need for a greater intervention focus on reducing student tobacco use than presently exists online or on-campus.

Sexual Behavior

Sexual risk behaviors among college students include multiple sex partners, unprotected sex, inconsistent and incorrect condom use, and use of alcohol or other drugs in conjunction with sexual activity.⁵³ Outcomes of sexually risky behaviors include sexual assault, AIDS and other STDs, unexpected pregnancy, and emotional distress.^{2,5,54} Among students participating in the 1995 National College Health Risk Behavior Survey, 86.1% reported having sexual intercourse, and 34.5% reported having six or more sex partners in their lifetimes. Female students were more likely to have had

sex and male students were significantly more likely to have had six or more partners in their lifetime. Among sexually active students (i.e., had sex in the last three months), only 29.6% reported using a condom during their last sexual intercourse.^{1,7,55}

There is evidence that alcohol may be associated with some types of risky sexual behavior. In a 2002 review of the literature, Cooper found drinking to be strongly related to the choice to have sex and to engage in risky sexual behavior (e.g., having multiple or casual sex partners). Drinking and protective behaviors such as condom use were inconsistently related. For example, analysis showed that alcohol was strongly associated with decreased protective behaviors (i.e., contraception and condom use) among younger students and among those having their first intercourse experience. There was no such association found among older, sexually experienced students.⁵⁵

In terms of consequences, according to a 1995 CDC report, approximately 75% of all gonorrhea cases and 90% of all Chlamydia cases happened among U.S. residents under 25 years old.⁵⁶ The highest rates of unintended pregnancies are among those between the ages of 15 and 24 years.^{1,57} Regarding sexual assault, according to the 1995 NCHRBS, one in five female college students have been forced to have sexual intercourse during their life.¹ According to the spring 2009 National College Health Assessment (NCHA), 4.9% of female respondents and 1.4% of males reported experiencing a sexual penetration or attempted penetration without their consent within the last 12 months.²⁴

These data describe the nature and magnitude of the potential risks and harms

that sexual activity presents to college students. This evidence also highlights the importance of providing effective sexual health information and resources that students will access, making the question of student e-Health engagement particularly relevant.

Diet and Exercise

Many college students have poor eating habits and low levels of physical activity.^{5,58-60} As a consequence, undergraduates are at risk of malnutrition, obesity, diabetes, and eating disorders.^{2,5,61} According to the spring 2009 NCHA, only 5.9% of student respondents (5.2% men, 6.3% women) reported eating five or more servings of fruit and vegetables as recommended by the U.S. Department of Agriculture and the American Cancer Society. Only 47.0% of respondents reported meeting the American College of Sports Medicine and American Heart Association's recommendations for regular moderate to vigorous exercise.⁶² As a consequence, based on students' body mass index (BMI), 21.4% of respondents (28% men, 17.7% women) were defined as Overweight (BMI: 25-29.9); 6.8% of respondents (7.7% men, 6.2% women) were designated as Class I Obese (BMI: 30-34.9); 2.4% of respondents (2.5% men, 2.4% women) were defined as Class II Obese – severe obesity (BMI: 35-39.9); and 1.4% of respondents (1.1% men, 1.5% women) were designated as Class III Obese – morbid obesity (BMI: ≥ 40).

In a 2004 study of students' dietary intake, Shankar et al. examined 422 black and white female undergraduates taking an introductory nutrition course using a 3-day food intake diary and a questionnaire on diet and health practices. The results showed that

26.5% of white college females (WCF) and 34.7% of black college females (BCF) received adequate caloric intake; 22.4% of WCF and 24.9% of BCF received adequate carbohydrates; 31.3% of WCF and 52.6% of BCF received adequate fat intake; and 34.9% of WCF and 22.5% of BCF received adequate dietary folate (B vitamins). Interestingly, while more black females were categorized as overweight or obese according to their BMI (48.0% BCF, 18.0% WBF), body image dissatisfaction was higher among white female students, who reported more use of compensatory dieting techniques (i.e., fasting, vomiting, laxatives, diuretics, excessive exercise, and smoking) compared to black female students.⁶³

There is conflicting evidence on the prevalence of eating disorders among college students. For example, in an ongoing cross-sectional study, Pyle et al. surveyed 1,836 freshmen about their behaviors and beliefs regarding weight and food. Findings showed that between 1983 and 1986 there was a decrease in the overall frequency of binge eating (3.2% 1983, 2.2% 1986), but an increase in self-induced vomiting among non-bulimic subjects (rates not provided).⁶⁴ In a different study, Oswalt and Welle-Graf surveyed a randomized sample of 320 university students in 1997 using a health risk appraisal tool that included a subscale to examine disordered eating patterns, eating disorders, and correlated body perceptions. Results were contrary to the common belief that eating disorders are widespread among college students: less than 2% were anorexic, less than 1% were bulimic, and only 2.8% exhibited disordered eating patterns.⁶⁵

Collectively, these reports underscore the diet-related challenges that students experience and the need for educational modalities, like e-Health, that can help mitigate these challenges and their negative impacts.

Academic Performance

Health risk behaviors also undermine academic performance. In a 2002 review of research focused on the types, degree, and patterns of negative drinking consequences, Perkins cites academic difficulties as the most frequently reported consequence of alcohol abuse.⁶⁶ Students who completed the National College Health Assessment survey (n = 87,105) reported the following health-related impediments that caused them to receive an incomplete, drop a course, or receive a lower grade in a course, an exam, or important project: stress (26.9%), anxiety disorder (18.5%), depression (11.6%), relationship difficulties (11.1%), and alcohol (5.2%).⁵ A dissertation study by Larson reinforced the impact of health status on college performance by discovering significant relationships between student grade-point average and their mental health, physical health, levels of stress, and alcohol and other substance abuse.⁶⁷

There is evidence that alcohol misuse negatively affects academic performance. In a longitudinal study involving over 200 four-year colleges that examined multiple aspects of the student experience, Astin found that “drinking is negatively related to college grade-point average (GPA) and graduating with honors...”⁶⁸ A 2003 study by Poster and Pryor surveyed 41,600 undergraduates from 28 four-year colleges to examine the impact of heavy alcohol use on academic performance and student engagement.

Findings showed that heavy episodic drinkers generally had lower GPAs, and that the more often students drank at heavy levels, the lower their GPA. In other words, heavy alcohol use negatively influenced individual overall grades. Regarding academic engagement, the authors found that students who engaged in heavy episodic drinking were less likely to substantively engage in interactions with their faculty, which is a strong predictor of positive educational outcomes.⁶⁹ Howland et al. conducted a randomized cross-over trial to examine the effect alcohol intoxication had on students' next-day academic performance. Findings showed that while students' test-taking performance was not affected the morning after intoxication, their mood disturbance scores and self-rated performance on quizzes and GRE tests were significantly worse when they were intoxicated the night before compared to placebo conditions.⁷⁰

Understanding Health Risk Behaviors

Many assume that the risks that students take with alcohol, drugs, and sex (among other behaviors) in college, are generally an expression of their new-found freedom and the urge to establish their identity by exploring new environments and experiences. Evidence suggests that there is much more to students' health risk behaviors.

For many undergraduates, risk-taking may be a natural part of developing maturity.⁷¹⁻⁷³ Steinberg argues that risk-taking occurs in late adolescence due to a gulf between the "novelty and sensation seeking" that increases during puberty and the "self-regulatory competence" that biologically does not develop until sometime in early

adulthood. Steinberg states that other psychosocial factors (i.e., peer influence, future orientation, and emotional arousal) also influence this self-regulatory capacity at different stages of development.

There are two phenomena, according to Steinberg, that account for age differences in risk-taking. First, a change in “reward sensitivity” during puberty causes adolescents, compared to adults, to seek more novelty and to need greater stimulus levels to feel the same pleasure. There is evidence that development of the limbic system occurring during puberty explains at least some of these changes in reward-seeking.⁷⁴ The second factor contributing to adolescent risk-taking relates to the relatively slow development of executive functions that control self-regulatory processes such as impulse control, foresight, and planning, which are still maturing during late adolescence and early adulthood.⁷³

For most students, college presents a less controlled environment for experimentation with alcohol, illicit drugs, tobacco, and unprotected sex, all of which create significant health risks.^{1-3,5,6,20,47,71,75-81} In this context, undergraduates (18-24 years) are increasingly viewed as late adolescents rather than early adults.⁷¹ This concept is reinforced in a study by Arnett in which only 23% of college students surveyed (n=346) viewed themselves as adults. At the same time, almost two-thirds of participants reported seeing themselves as adults in some ways but not in others.⁷⁵

Students’ self-perceptions as emerging adults match the developmental dynamic that Steinberg presents. These perspectives also align with the evolution of student risk-

taking witnessed by college administrators and faculty. Many of my administrative colleagues share anecdotal evidence that the volume and intensity of students' health risk behaviors are highest in their first and second years and that, individually and collectively, such actions tend to decrease dramatically as students approach their senior year. In other words, college professionals believe that the less physically and emotionally mature first-year students present more risky behaviors than their more physically and emotionally mature colleagues in the upper class years.

What emerges from this empirical and anecdotal evidence is a three-dimensional picture of the internal and external factors that place the ultimate risk-takers (college undergraduates) in the ultimate place for risk-taking (college). Internally, according to Steinberg and Arnett, we can generally consider college students as less developmentally mature late adolescents who experience a biological drive for high pleasure-seeking but have poor impulse control. Externally, college aggregates student risk-takers in an environment with extensive free time, powerful peer influences, and limited structure, thereby creating great potential for unhealthy pleasure-seeking and risk-taking experimentation. Ultimately, by recognizing the confluence of factors that contribute to students' health risk behaviors, we can better understand the critical need for effective health education tools and the potential utility of e-Health.

Help-seeking

As a counterpoint, studies have shown that college students are more likely than their less educated counterparts to seek help for health-related problems.^{82,83} Multiple

studies have found that women consistently seek help more often than men for medical, emotional, or substance abuse issues.⁸²⁻⁸⁷ The fact that college men seek help less often than women is of particular concern since they are also more likely to engage in risk-taking behavior.^{84,88} The propensity for help-seeking is a potential predictor candidate for this study, considering its possible relationship with health information-seeking.

Predictors of Health Risk Behaviors

The research focused on sociodemographic and psychobehavioral characteristics point to possible predictors of health risk behaviors and related interventions. Huang, DeJong, and others assessed the sociodemographic and psychobehavioral traits among U.S. undergraduates (n = 5,210) who abstain from alcohol, in search of abstinence predictors. Results showed that predictors of abstention included the student's own negative attitude toward alcohol use; perception of friends' alcohol attitudes; male gender; being under age 21; abstaining in high school; non-athlete; nonsmoker; non-marijuana user; participant in a religious group; and having a close friend who abstains.⁷⁹ Voh Ah et al. found that self-efficacy (i.e., the belief that one is able to achieve a goal) was a significant predictor of undergraduate alcohol, smoking, exercise, nutrition, safety, and sun-protection behaviors. The authors also found that perceived threat of risk and perceived barriers to activities such as exercise and healthier eating were additional predictors of risk behaviors.^{3,47} Wallston and Wallston, reviewing the literature on health locus of control (LOC), reported that subjects who believe positive outcomes are individually driven (internal LOC) are more frequent health information-

seekers and more apt to engage in healthy behaviors.⁸⁹⁻⁹¹ A literature review by Massey et al. found adolescent goal content and pursuit (i.e., future orientation) to be significantly related to positive health behaviors and well-being.⁸¹ Finally, Grossman et al., assessing resilience in adolescents, found that family cohesion, locus of control, and both mother/father and non-parental adult communication (e.g. with teachers) were highly protective factors in particular contexts.⁹² Each of these studies highlights the dynamic between particular demographic and personality trait and health risk behaviors and point to predictor variables worth considering for this study.

Health Risk Behavior Interventions

To address the wide spectrum of student health risk behaviors, college administrators, educators, and clinicians have employed varying prevention and intervention programs for individuals, small groups, and large student populations.^{2,9-11,17,93} Collegiate health risk intervention strategies traditionally include policy controls (e.g., alcohol regulations), infrastructure change (e.g., protective campus lighting), communication campaigns (e.g., social norms marketing), awareness and prevention education (e.g., classes, presentations, websites), and individual counseling and treatment (e.g., alcohol or drug treatment or mental health counseling).^{2,8,94-96} While these intervention modalities often require considerable financial and human resources to develop, implement, and maintain, their substantive effectiveness regarding reach, behavior change, and sustained risk reduction is in question.⁹⁻¹¹ It is unclear how many and what types of students are impacted by various health risk interventions. It is safe to

assume that outcome evaluations that effectively measure student behavior change and reduced risk and harm are rare and inconsistent.

Regarding health information delivery, despite a strong emphasis by college faculty and staff on student education, there is little evidence that health information effectively reaches its audience. A 2001 study by Bener and Gowda, using data from the 1995 NCHRBS, examined the degree to which undergraduates report receiving health information from their institution. In fact, only 6.0% of students reported receiving information on all examined health topics (i.e., tobacco, alcohol and other drugs, violence, injury, suicide, pregnancy, STDs, safety, diet and nutrition, and physical activity and fitness), while 77.4% reported receiving preventative information from their college on at least one of the reviewed topics. Students most often received preventative information on alcohol and other drugs (49.2%), HIV/AIDS (49.1%) and STDs (43.0%), and were least likely to report receiving information on suicide (17.6%).⁹

Because of the persistent and pervasive negative consequences of substance use on college campuses, the majority of health-related college policies focus on alcohol and other drugs. Shaffer et al. assessed the alcohol and gambling-related policies in 119 colleges across the U.S. to evaluate rulemaking patterns (i.e., punitive vs. rehabilitative) and their association with drinking and gambling rates. They found that nearly all schools had alcohol policies, while only 22% had a gambling policy. Most policies were punitive or restrictive, with recovery-oriented policies noted in less than 30% of colleges. The authors concluded that the over-emphasis on punitive campus alcohol regulations

likely causes colleges to miss rehabilitative opportunities, thus undermining their harm-reduction efforts.⁹⁷

Regarding health policy access, Fadden and Barkin assessed the internet-posted alcohol policies of 52 top U.S. universities listed in the 2002 rankings of *US News and World Report*. Finding that most of these policies were difficult to find and understand, the authors recommended that schools post all alcohol-related policies in one location, with links to alcohol policies from health center, residential life, and other related university web pages. The authors also recommended including search terms such as “alcohol policy” or “alcohol regulations” in college search engines to make information finding easier.⁹⁸

While focused on alcohol and other drugs, DeJong advocates for an environmental management approach that offers strategies that advocates can adapt to the spectrum of health risk interventions. DeJong defines *environmental management* as the spectrum of preventative policies and programs that colleges use to change the campus environments and reduce risk behaviors and related harm. In his administrator’s guide, “Alcohol and Other Drug Policies for Colleges and Universities,”⁹⁹ DeJong lists the following five categories of environmental management strategies related to alcohol and other drugs:⁹⁹⁻¹⁰²

- Offering and promoting alcohol and drug-free social, extracurricular, and public service options.
- Establishing social, academic, and residential environments that promote healthy behavioral norms (i.e. social norms marketing).

- Limiting alcohol availability.
 - Restricting the marketing and promotion of alcohol.
 - Creating and promoting enforcement of alcohol and drug policies and laws.
- Social norms marketing is a popular environmental management strategy used

widely to address various student health risk behaviors.^{33,103,104} The 2002 Harvard School of Public Health survey of 746 U.S. college administrators found that 49% of the 4-year residential colleges surveyed claimed to have or to be conducting a social norms marketing campaign.^{30,104,105} Social norms theory (SNT) suggests that behavior is influenced by how individuals perceive the behavioral norms of their peer group and that there are often misperceptions of those norms. If exaggerated, these misperceptions can lead individuals to be more likely to engage in risky behaviors. Conversely, SNT suggests that correcting such misperceptions will result in decreased risk behavior.^{103,106}

Despite significant college investment in social norms strategies, there is mixed evidence of substantive positive behavioral change. To evaluate a social norms intervention targeting high risk sexual behaviors, Scholly et al. anonymously surveyed undergraduates at four colleges (two private, two public) on their sexual behaviors and their perceptions of the same behaviors of other undergraduates on their campus. Following a nine-month social norms media campaign promoting safer sexual behavior (with messaging via posters, newspaper ads, pens, etc.), participants completed the same survey questionnaire again. Results showed that respondents overestimated peers' levels of sexual activity, numbers of sexual partners, and rates of sexually transmitted

disease and pregnancy but underestimated rates of condom use. There was no evidence of change in beliefs or practices at the end of the intervention.¹⁰³

In contrast, in a 2008 study, Labrie, et al. used computerized handheld keypads (i.e., clickers) to gather personal responses from 660 varsity athletes to alcohol-related questions that assessed their personal behavior and their perceptions of peer group behaviors and attitudes. Researchers immediately reflected these responses back to participants to demonstrate the discrepancies between perceived and actual group normative behavior (frequency of alcohol consumption, drinks per week, joining heavy drinking events, being drunk at a party, missing class due to hangover, being drunk in-season). Results showed that, compared to baseline, perceived group norms, behaviors, and attitudes and drinking-related outcomes were reduced at both one- and two-month follow-up.¹⁰⁷

In summary, regarding college intervention targeting health risk behaviors, there is evidence that, in general, many students do not received all of the health information they need to address the continuum of health challenges that they routinely face. Colleges generally use a broad spectrum of strategies to address student risk behaviors, which are directed mostly toward alcohol and other drug interventions. Social norms marketing is a popular behavioral change strategy used by many college staff. The research evidence is mixed regarding who is truly using social norm strategies on campus and whether it is effective in promoting sustained behavioral change. Its

popularity may reflect positive outcomes experienced on individual campuses that have not yet been captured in research and best practice literature.

Computer and Internet-based Health Education

There is increasing interest in the use of computer and internet-based health education as a cost-effective way to teach health-promoting information and skills to great numbers of college students.^{12-16,93} Computers are now a readily available and essential academic and social resource for college students, and there is evidence that students often view the internet as a valuable source of health information. Escoffery et al. surveyed 743 undergraduates to assess internet use, health-seeking behavior, and attitudes related to seeking health information on the internet. A majority of students (73%) reported getting information via the internet, with 53% naming the internet as their preferred health information resource. Women and those with more internet experience used the internet for this purpose more than others.¹⁵ A 2001 Kieser Family Foundation survey report by Rideout found that, among the 75% of all respondents 15- to 24- years-old who used the internet to find health information, 39% did so at least once a month, found the information very useful, and said they changed their behavior because of the information they got online.¹⁰⁸ Separate studies by Papemy et al. and Turner et al. demonstrated that computerized programs tailored for young people increase self-disclosure in sensitive areas including risky sexual behavior, excessive alcohol use, marijuana use, and family problems. Computer-based programs offer a confidential and judgment-free environment that may promote changes in knowledge,

attitudes, and behaviors.^{14,109,110}

Presently, web and computer-based health products available to higher educational institutions focus primarily on alcohol and other drugs. Popular product names include *College Alc*, *Alcohol-Wise*, *e-CHUG*, *AlcoholEdu*, and *MyStudentBody*. These programs aim to reduce alcohol-related risk behaviors through education, brief behavioral assessments, and normative feedback on individual behaviors and perceptions, as well as to promote safe alcohol use strategies. There is a growing body of research addressing the efficacy of these online education programs for alcohol and other drugs.^{14,17,111-130} The following is a brief overview of each of the prominent programs and related research.

College ALC

Prevention Strategies (PS), based in Browns Summit, North Carolina, developed and manages College Alc. According to the company's website, the program includes:

- A customized, web-based course that allows schools to incorporate campus colors, policies, and resources.
- Pre- and post-test online student surveys to measure change.
- Writing assignments and immediate student feedback.
- Tools to allow schools to track student progress.
- Additional resources including a course textbook and a workbook for sanctioned students.

The company describes the product as an “evidence-based program designed to reduce college student drinking and prevent consequences” by empowering schools “to

provide their students with critical tools and information regarding the prevention of alcohol-related harm.”¹³¹ Research found that College Alc students reported increased knowledge of alcohol use and its effects; higher negative alcohol expectancies; and greater intentions to reduce alcohol-related harm relative to comparison group students. Drinkers reported decreases in high-risk drinking and getting drunk in the last 30 days and less negative alcohol-related consequences (i.e., missing class, damaging property) in the past 30 days.^{112,122,132}

Alcohol-Wise

According to its website, San Antonio-based 3rd Millennium Classrooms, the creator of Alcohol-Wise and other programs, has provided online and drug prevention and intervention courses for over 300 colleges and court systems in 42 states for nearly a decade.¹³³ The Alcohol-Wise course includes four lesson plans and a 30-day follow-up assessment. The course is organized as follows:¹³⁴

- Lesson 1-Introducing Alcohol-Wise: Provides a course overview and tests students’ knowledge of alcohol-related issues. Students complete a short survey and drinking self-assessment called e-CHUG.
- Lesson 2-Understanding the Buzz: Provides students with information on how alcohol is absorbed and eliminated and interactive information on blood alcohol content (BAC) and its relationship to levels of intoxication.
- Lesson 3-Levels of Alcohol Use: Addresses perceptions of college drinking and how it affects attitudes and behaviors. Covers ways personal drinking choices impact peers.
- Lesson 4-First Things First: Covers how alcohol affects academic progress and social behavior, dangerous drug and alcohol interactions, and problem drinking patterns. Students conclude by completing a post-survey and final exam.

- 30-Day Follow-up: Students take a second e-CHUG evaluation and an attitudinal survey that provides a “mini-intervention” and comparative outcome report.

e-CHUG

The eCHECKUP TO GO or e-CHUG program is a personalized online prevention intervention for alcohol “developed by counselors and psychologists at San Diego State University.” The program uses brief motivational interviewing strategies and social norms theory to encourage students to reduce their alcohol consumption by reflecting on personalized information about their use behaviors and risks. e-CHUG can be used as a stand-alone intervention program or be combined with other programs such as Alcohol-Wise. Listed utilization strategies include required prevention programming for freshmen; clinical tool used by counselors, alcohol and other drug (AOD) counselors and educators, and other health professionals; judicial sanction for students who violate campus alcohol policies; and Greek life alcohol awareness programming. e-CHUG is a self-guided program that reportedly takes up to 50 minutes: 20 to 30 minutes for the assessment and an additional 15 to 20 minutes for the *Personal Reflection* component.¹³⁵

A randomized control study by Lane and Schmidt compared Alcohol-Wise including e-CHUG (AWeC), a face-to-face AOD informational session and an e-CHUG assessment (AODeC), and a no-treatment control group. Results showed that students completing the AWeC and AODeC programs generally earned GPAs a half-point higher and had higher retention rates than control group students. The most pronounced effect

on GPA was shown in the fall semester when the study took place; the authors stated that this finding likely accounts for at least part of the differences in retention.¹¹⁸

Multiple studies have shown eCHUG's efficacy for freshmen and general college populations.^{115,116,118,125,136}

AlcoholEdu

Developed by *Outside The Classroom* (OTC), based in Needham, Massachusetts, AlcoholEdu is described as "the only online alcohol prevention program that was designed for population-level, primary prevention." According to its website, its personalized approach offers a student experience that impacts individual behavior and campus culture by encouraging students to self-reflect and consider changing their drinking behaviors. OTC claims that AlcoholEdu is "used on hundreds of campuses and by 36% of all first-year students at America's four-year higher education institutions."¹³⁷

AlcoholEdu's online program focuses on the following goals, tools, and content:¹³⁸

Build baseline student knowledge using:

- Interactive lessons based on behavioral change theories.
- Social norms messaging based on student survey data and an analysis of media and advertisements.
- True student success stories that promote self-efficacy and positive behaviors.
- Use of entertaining stories and activities that reflect students' communication styles and channels.

Motivate student action:

- Students receive personalized online experiences according to their course survey responses.

- “What would you do?” scenarios help students practice and reinforce safe decision-making.
- BAC exercise lets student assess their drink habits.
- Policy debates and other discussions support student engagement.

Support student decisions:

- Personal Plan tools help student set specific goals and strategies regarding drinking choices.
- Students receive booster emails later in the year to reconnect them with their Personal Plans and help them monitor their progress.

Several recent studies offer evidence of AlcoholEdu’s efficacy. In a quasi-experimental study involving 20,150 students from 225 institutions, Wall found that students taking the course reported less frequent heavy drinking or high-risk drinking (i.e., playing drinking games, pre-gaming, choosing drinks with more alcohol-content) and fewer negative academic consequences (i.e., missing class, missing a deadline, attending class hung over) than students in the control group.¹²⁶ In 2008 Hustad et al. compared eCHUG to AlcoholEdu using a three-group randomized control trial (n=82). Results showed that both intervention groups reported decreased or stable alcohol use compared to the control group, but only the AlcoholEdu group was significantly different than the control group regarding negative alcohol-related consequences.¹³⁶ Finally, the 2007 version of AlcoholEdu was evaluated by Lovecchio, Wyatt, and DeJong using a randomized control design, with 1,620 freshmen assigned to a treatment or assessment-only control group. The AlcoholEdu group reported significantly lower levels

of alcohol use, less positive alcohol-related attitudes, and fewer negative drinking consequences than the control group.¹¹⁹

MyStudentBody

MyStudentBody (MSB) is an internet-based harm-reduction program created by Inflexxion, Inc., also based in Needham, Massachusetts, to address several health risks experienced by college students. According to its website, “MyStudentBody is a complete alcohol, drugs, and student wellness program...used by leading public and private universities across the nation to manage institutional risks and positively impact student retention rates.”¹³⁹ MSB is unique in using a broad-spectrum wellness approach that addresses drug and alcohol abuse, tobacco use, sexual health, nutrition, and stress by utilizing motivational feedback to encourage risk-reduction behaviors.

The “Rate Myself” surveys, present in each module, are a program centerpiece. These brief, topic-specific questionnaires assess relevant personal beliefs, risk-taking behaviors, lifestyle habits, and experienced consequences. After completing the Rate Myself surveys, students receive immediate risk-related feedback along with recommendations of site content tailored to meet their needs and possible interests. Content includes general information (e.g., “Drug Basics,” “Stress 101”), peer stories (“Student Voices”), expert answers to frequently asked questions (“Ask the Expert”), and college health news. Recent additions to MSB are optional courses in the alcohol and drug modules that are designed to offer more detailed assessments and feedback on these high-risk behaviors. MSB tracking functions allow students to monitor changes in

personal learning and behavior, while school administrators can compare campus-specific information against national MSB aggregate data.¹⁴⁰

Four studies involving MyStudentBody offer evidence of program efficacy. In a study of MSB-Alcohol, Chiauzzi et al. randomized 265 students from five private and public institutions in Massachusetts into either a MSB-Alcohol group or a control group. Women using MSB reduced their peak and total consumption during special occasions and reported fewer negative consequences than non-MSB users.¹⁴ In a 2005 MSB-Nutrition study, Franco et al. randomized 476 students to a group using MSB-Nutrition for two sessions, a group using MSB-Nutrition for two sessions and a booster session, or a control group exposed to two anatomy-focused website sessions. Results demonstrated increased reported fruit and vegetable intake in the MSB-N group compared to the control group, but noted no change in physical activity.¹⁶ Chiauzzi evaluated MSB-Tobacco by randomizing 238 students with a history of tobacco use into three groups: unstructured use of MSB-Tobacco, structured MSB-Tobacco use, and use of a standard text-based tobacco educational website. Findings showed mixed outcomes for MSB-Tobacco depending on subjects' baseline smoking levels. The low-smoking, unguided MSB-Tobacco users (<10 cigarettes/week) did not increase their smoking, while the heavy-smoking, unguided MSB-Tobacco users (>40 cigarettes/week) performed slightly better than the control group.¹² Finally, in an evaluation of MSB-Stress, Chiauzzi et al. randomly assigned 235 students at six colleges to MSB-Stress, a

control health information website, or no intervention. The MSB-Stress group reported short-term improvement in stress management, but only at one-month follow up.¹³

Summary

U.S. college and university students engage in various health risk behaviors that can negatively affect their safety, health, and academic success. Age, sex, and race and ethnicity are among the known factors influencing student health behaviors. Some research points to demographic and psychobehavioral predictors of student health risk behaviors.

College administrators, educators, and clinicians use a variety of strategies, programs, and tools to prevent or decrease students' risky behaviors and reduce harmful consequences. Most college interventions focus on behaviors relating to alcohol, drugs, and sex. There is evidence that many of these efforts have limited reach and impact. In recent years, however, multiple computer and internet-based health education/harm-reduction programs for college students have become available, many of which have demonstrated efficacy in reducing risky behaviors and consequences.

If web-based programs do truly work, the next important question is whether students really use them when not forced to do so. How different students engage in electronic college health programs remains a relatively unexplored question. Defining student health information engagement, characterizing differential student engagement, and examining engagement predictors are the focus of this dissertation.

Chapter II

LITERATURE REVIEW

Introduction

Students' engagement in relevant health content is a critical first step toward knowledge acquisition and positive behavioral change. In order to tap into the potential of any health-related material, students must first access and become actively involved with the content. Before examining how undergraduate students engage with online health information, it is useful to first define the term "engagement" as it relates to my study. In the first part of this chapter, I review engagement-related research focused on higher education institutions, classroom involvement, reading literacy, online education (i.e., distance learning), advertising and marketing, and online health information (*e-Health*). Next, I establish a conceptual framework for undergraduate e-Health behavior that identifies the elements of student e-Health engagement that informed my investigation.

Defining Student Engagement through Multiple Lenses

College Engagement

In higher education, the word "engagement" has become a catch-all term used to describe a spectrum of student behaviors, both curricular and extracurricular,^{141,142} that are seen as indicators of academic quality and student success.¹⁴³ School engagement is attracting growing research attention aimed at mitigating poor academic performance and low college retention rates.^{144,145} From this macro-perspective come several

definitions of student engagement. Krause states that engagement “refers to the time, energy, and resources students devote to activities designed to enhance learning at university,”¹⁴² whereas Krause and Coates describe engagement as “the quality of effort” students devote to “educationally purposeful activities that contribute directly to desired outcomes.” Krause also argues that to understand student engagement, we should also look at its alternatives: “inertia, apathy, disillusionment, or engagement in other pursuits.”¹⁴⁶

Regarding measurements of engagement, Beer notes that early researchers concentrated on simple attendance measures,¹⁴¹ which Douglas suggests are only indicative of participation without considering participation quality.¹⁴⁷ The National Survey of Student Engagement (NSSE), a nationally administered collegiate survey designed to gauge academic quality, measures student engagement as the “...amount of time and effort students put into their studies and other educationally purposeful activities.” NSSE looks at student engagement as a global composite of student activities and behaviors (e.g., class participation, time with study behaviors, campus involvement), but also considers the environmental factors (e.g., faculty accessibility, advising resources, campus culture) that make up students’ campus experience.¹⁴⁸

Regarding e-Health engagement, it is likely that individual student effort and intent, along with immediate environmental factors, both website and campus, help define student engagement in online health content. In addition, as with institutional engagement, measures of student e-Health engagement may provide indicators of e-

Health program quality and student health success.

Classroom Engagement

Engagement researchers have focused on the classroom environment and related activities to examine and improve student participation and achievement. Bulger et al. describe early studies that linked engagement -- defined in terms of interest, effort, motivation, and time on task-- to positive learning outcomes.¹⁴⁹ In a 2004 review of the academic engagement literature, Fredricks and her colleagues present a multidimensional "meta-construct" of engagement divided into three domains: behavioral, emotional, and cognitive:

"Behavioral engagement draws on the idea of participation; it includes involvement in academic and social or extracurricular activities and is considered crucial for achieving positive academic outcomes and preventing dropping out. **Emotional engagement** encompasses positive and negative reactions to teachers, classmates, academics, and school and is presumed to create ties to an institution and influence willingness to do the work. Finally, **cognitive engagement** draws on the idea of investment; it incorporates thoughtfulness and willingness to exert the effort necessary to comprehend complex ideas and master difficult skills."¹⁴⁴

Fredricks et al. suggest that differing levels of engagement fall along a continuum. For example, they posit that behavioral engagement can range from simply "doing the work" to active participation in student government. Emotional engagement can range from students just liking their class to strong class loyalty and identification. Cognitive engagement can range from simply memorizing content to using "self-regulating learning strategies (i.e., self-directed strategic learning behaviors that include planning, monitoring, time management, and other elements of meta-cognition) to

promote deep understanding and expertise.” The authors also suggest that these three qualitative engagement dimensions can vary in duration and scope. In other words, a student’s behavioral, emotional, or cognitive engagement can be short-term and situational or long-term and stable.¹⁴⁴

Fredrick’s three engagement dimensions align with students’ online education experience and are applicable to measuring student e-Health engagement. If I can identify cognitive, emotional, and behavioral indicators of students’ e-Health program involvement, I am likely to establish a robust three-dimensional engagement metric that could prove useful to all stakeholders.

Multiple researchers link student engagement with concepts of motivation. Several researchers have found associations between engagement and two types of motivational goal orientations: mastery-orientation and performance-orientation. That is, some students set learning goals meant to increase competence that lead to content mastery, while others take on performance goals aimed at favorable judgments regarding their performance.¹⁵⁰⁻¹⁵⁴ Handelsman et al. describe mastery-oriented students as intrinsically motivated individuals who seek challenging tasks and continue to try even after failure. Performance-oriented students are characterized as more extrinsically motivated and less persistent.¹⁵²

In sum, the classroom engagement literature adds insights on how and why students may or may not direct their thoughts, emotions, and actions toward their academic performance and growth. These concepts are likely to be useful for

understanding student e-Health engagement and related learning.

Reading Literacy Engagement

Research and language used in the areas of reading education and literacy align with the collegiate and classroom engagement literature. Csikszentmihalyi describes engaged reading as “a state of total absorption or *flow*.”¹⁵⁵ In his work on literacy, Cambourne describes engagement in literacy as requiring a purpose, a drive to understand, belief in ones’ capacity, and a responsibility to learning.¹⁵⁶ Guthrie et al. define engaged readers as “motivated to read for a variety of personal goals, strategic in using multiple approaches to comprehend, knowledgeable in their construction of new understanding from text, and socially interactive in their approach to literacy.”^{157,158} Elsewhere, Guthrie provides a summary definition, stating that “engaged readers...coordinate their strategies and knowledge (cognitive) within a community of literacy (social) in order to fulfill their personal goals, desires, and intentions (motivation).”¹⁵⁸

Online Learning

This decade’s explosive growth in internet use has ushered in a rapid expansion of online educational technologies that assist or, increasingly, replace traditional modes of education and learning. In their eighth annual report on the state of online learning in the U.S., the Babson Survey Research Group (BSRG) defines the spectrum of online learning modalities as follows:

“Online courses...are defined as those in which at least 80 percent of the course

content is delivered online. Face-to-face instruction includes courses in which zero to 29 percent of the content is delivered online; this category includes both traditional and web facilitated courses. The remaining alternative, blended (sometimes called hybrid) instruction is defined as having between 30 percent and 80 percent of the course content delivered online.”¹⁵⁹

According to the same BSRG report, since 2002 enrollment in online programs has grown at rates far greater than for the total student population in higher education. In the 2009 fall semester, over 5.6 million students took at least one online course, an increase of nearly one million from 2008 and almost 30% of U.S. college students.¹⁵⁹

With the growth of online education has come growing attention to the measures of education quality, learning outcomes, student satisfaction, and retention. In fact, even as more students enroll in online courses, there is evidence that attrition rates for these courses are higher than those for traditional classroom-based courses.¹⁶⁰ Because stakeholders in education continue to demand stronger accountability and proof of teaching effectiveness,^{161,162} there is now a growing body of research focused on student engagement in online courses. For example, Robinson et al. used measures from the National Survey of Student Engagement (NSSE) to evaluate engagement in online courses at three institutions. Findings showed that online learners were moderately more engaged according to selected NSSE measures (level of academic challenge, student-faculty interaction, active and collaborative learning, and enriching educational experience) compared to on-campus learners.¹⁶¹

Findings from burgeoning research on online learning may prove instructive in examining e-Health engagement since they share similar characteristics and seem to

employ common pedagogical strategies.

Advertising Research and Engagement

Engagement is a term that advertising researchers have used in studies of advertising effectiveness. This field of inquiry is relevant to student e-Health engagement given the similarities between selling products and services and the uniquely challenging task of selling health information to college students.

In addressing the Advertising Research Federation, Creamer presented the following working definition of engagement: “Engagement is turning on a prospect to a brand idea enhanced by the surrounding context.” With this, Creamer attempted to move researchers beyond the usual metric of the “number of eyeballs that see ads” to a more consumer-centric assessment.¹⁶³ Plummer also emphasizes the importance of a consumer-centered focus, stating that engagement is “...about providing messages, services, and advertising storytelling in a way that resonates.”¹⁶⁴

Heath distinguishes between engagement and attention. He first describes “active attention” as a “conscious rational construct” in which consumer attention is defined as the amount of conscious thinking that happens when a consumer processes an advertisement. Heath then defines engagement as a “subconscious emotional construct” and the level of consumer engagement as the amount of “feeling” that is generated when a consumer processes an advertisement. He emphasizes that emotional engagement and rational attention operate independently in the consumer’s response to advertising. “It seems possible to be highly emotionally engaged with advertising and

yet not be paying much attention, or to be highly emotionally engaged and paying a lot of attention.^{165,166} This resonates with Fredricks' discussion of cognitive and emotional engagement in the academic realm, suggesting a degree of consensus across disciplines that content engagement is a multi-dimensional concept.

e-Health Engagement

Lefebvre et al. developed a scale to assess user engagement with online health content, or e-Health, which they defined as a "broad term used to refer to an array of existing and evolving digital resources and practices to support health and health care."¹⁶⁷ The authors drew from advertising research to define e-Health engagement as "the process of involving users in health content in ways that motivate and lead to health behavior change."¹⁶⁷ This definition acknowledges that online engagement is influenced by website variables including "information architecture (i.e., the organization and structure of web systems including the relationship of web-pages and page elements)," site usability, and content format and structure, as well as by user traits and motivations.^{168,169} In contrast to the *user-to-content* orientation of the previously cited engagement literature, Lefebvre et al. used a *content-to-user* frame and examined the engagingness of health education websites. When considering how to redesign such websites, the researchers questioned whether processes for assessing commercial consumer engagement could be used effectively in the health realm. Findings found the e-Health Engagement Scale to be a valid measure of user engagement.¹⁶⁷

Unfortunately, the research regarding e-Health engagement is extremely limited.

According to the 2006 Health and Human Services report, *Expanding the Reach and Impact of Consumer e-Health Tools*, "...because of a lack of existing research and publicly available data...little information addresses factors related to users' motivation, engagement, and understanding of e-Health tools and their relevance to strategies to promote greater use."¹⁷⁰ To address the research gap, the Robert Wood Johnson Foundation launched the *Health e-Technologies Initiative* (HETI). A 2007 HETI report presented findings from stakeholder interviews and surveys. On the subject of consumer engagement, there was a consensus regarding the obvious need for empirical data: "There does not appear to be a well-coordinated effort to address the research-to-practice gap---and what is actually known about, for example, the influence of demographics and psychosocial factors or access to technology on consumer engagement is extremely limited."¹⁷¹

Among the key HETI report recommendations relevant here were suggestions to "engage consumers where they live," "develop a full spectrum of e-Health tools," and "reach underserved populations." To engage consumers, the authors emphasize the importance of enlisting community leaders to encourage potential users to access health information using new online technologies.¹⁷¹ For college students, who are strong internet and computer users, this means encouraging student leaders to promote college e-Health programs and content using student-friendly online communication channels (e.g., Facebook, Twitter) and on-campus channels (e.g., residence hall meetings, posters, bulletin boards).

To foster the development and use of a spectrum of e-Health tools, the HETI authors stressed the need to include e-Health content that addresses “[health care] decision support, behavior change, health care tools, and personal health records” using a variety of web-based technologies.¹⁷¹ For undergraduates, this suggestion points to future opportunities to expand e-Health content beyond risk behavior change to include, for example, help-seeking, personal care support, and life-skills development. In addition, this report recommendation may also highlight the benefit of expanding present college e-Health programs to mobile internet technologies (e.g., smart phones) that college students often prefer. The inclusion of social networking capabilities in college health education websites is also a consideration that could improve access and learning.

Finally, in the HETI report’s recommendation to reach underserved populations, the authors reflected the basic need to reach out across diverse cultural groups to improve “language, literacy, health literacy, and information-seeking skills.” Issues of language, health literacy, and information-seeking skill development are specifically relevant for higher education communities across the U.S., considering the growing diversity of literacy, health competence, and informatics skill levels across college student populations.

e-Health Engagement Defined

The available research literature that addresses whether, how, or why consumers engage e-Health information is extremely limited. I found no literature directly

addressing undergraduate e-Health engagement. Some researchers have begun to identify this investigative need and point to important areas of inquiry.

There is some evidence, however, that methods of measuring commercial consumer engagement are useful in measuring health consumer engagement in related content. Online education research is a growing area in which methods of assessing student engagement tap into the growing field of collegiate academic engagement research that encompasses institutional, classroom, curricular, and extracurricular activities. Research in reading development and literacy is also a relevant area of investigation.

Some common engagement elements found across disciplines include time on task, motivated action, cognitive effort, emotional investment, social connection, and outcome interest. Insights from these engagement perspectives can contribute to new knowledge regarding student e-Health engagement. Based on the full spectrum of the engagement literature, I propose the following definition of undergraduate e-Health engagement:

Student e-Health engagement is the amount of time and attention devoted to processing e-Health content to meet personal and academic goals. This is not a passive process: students who fully engage are motivated to learn and therefore use personally relevant content in cognitive, emotional, and interactive ways. In a collegiate environment, e-Health engagement and learning is both an individual and communal enterprise, where the ultimate goal is to change to improve safety and health.

This definition provided a guide for the study design, including the consideration of

potential e-Health engagement predictors. Next, I present a comprehensive model for undergraduate e-Health engagement behavior.

e-Health Engagement Behavior

My conceptual model for undergraduate use of online health information (e-Health) was inspired by T.D. Wilson's 1995 model of information behavior.^{172,173}

Information behavior, according to Wilson, is all human behavior related to the sources and channels of information, including both passive and active information seeking and use.¹⁷⁴ Wilson's model—drawn from the fields of health communication, psychology, consumer behavior, social diffusion innovation, and organizational decision-making—is presented as a flow diagram that maps the behavioral options of individuals who need information. Similarly, my model aims to diagram possible behavioral pathways for undergraduates' use of e-Health information.

Model of Undergraduate e-Health Information Behavior

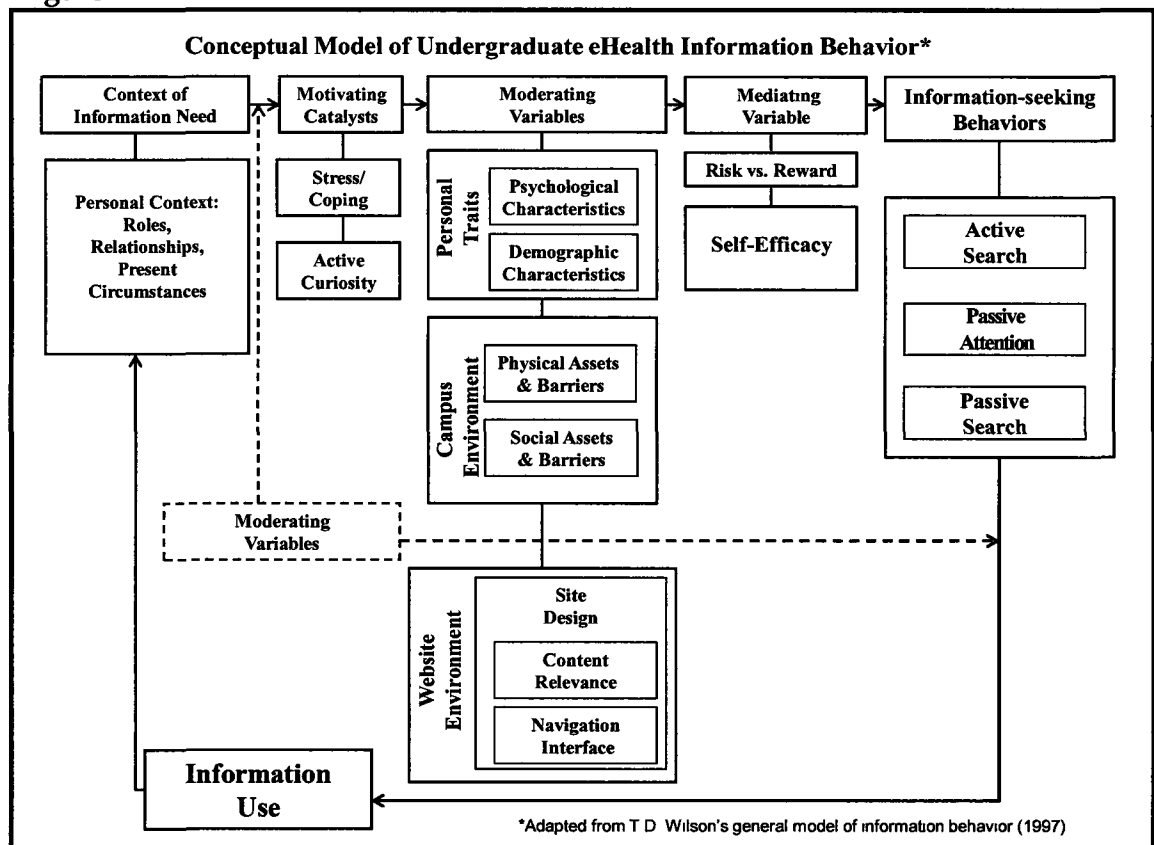
The conceptual model of student health information behavior, shown in Figure 1, provides the theoretical foundation for my dissertation study. While my thesis primarily examines the psychobehavioral and sociodemographic predictors of student engagement with health websites, it is useful to consider the e-Health information dynamic in its entirety.

Context of Information Need

My model relies on Wilson's two basic propositions regarding information behavior: first, that the need for information is a secondary need triggered by more basic

primary needs; and, second, that in the drive to find information to satisfy a need, people are likely to encounter factors that serve to assist or impede their goal.¹⁷³ Wilson characterizes basic needs as physiological, cognitive, or affective requirements that are aroused in the context of each person's roles, relationships, and immediate environmental circumstances (i.e., "Personal Context").¹⁷³ College undergraduates' layered roles of learner, friend, romantic partner, family member, employee, or member of various campus organizations set the stage for a wide range of health information needs.

Figure 1



Motivating Catalysts

Motivating catalysts stimulate an acknowledged information need that then activate a behavioral chain that proceeds stepwise toward information-seeking and use.

Stress and coping

Wilson states that stress is the proximal cause of an individual's information-seeking behavior.^{172,173} Folkman defines stress as "...a relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and as endangering his or her well-being."^{172,175} The drive to cope with an adverse situation is a motivating catalyst that sparks activities leading to information-seeking and use.¹⁷² Folkman and Lazarus define coping as "...cognitive and behavioral effects to master, reduce, or tolerate the internal and external demands that are created by stressful situations."^{172,176} The model assumes that seeking, acquiring, and using relevant information is a reasonable coping strategy that can meet a particular need and relieve stress.

In their examination of stress and coping styles in a clinical setting, Miller and Mangan state that "...one key situational property that has consistently been found to affect stress is whether the individual has maximal information (predictability) or minimal information (unpredictability) about an event and its effects."¹⁷⁷ Information, then, is a resource that contributes to one's ability to cope by helping to predict the individual's environment and manage stress.

Folkman defines two main functions of coping: emotion-focused coping that

serves to regulate distress, and problem-focused coping that aims to manage the problem that causes distress.¹⁷⁵ In a study examining information-seeking under stress, Van Zuuren and Wolfs found that information-seeking was highly correlated with problem-focused coping.¹⁷⁸ Often, then, students may seek relevant health information to resolve a related concern and alleviate associated distress (e.g., need, fear, discomfort).

The stress/coping concept is useful in considering possible rationales behind student use of health information. Undergraduates, like most others, meet the seemingly endless manifestations of personal health-related stressors (issues related to alcohol, drugs, sexual health, tobacco, mental health, nutrition) with variations on two simple choices: they cope through either direct action or avoidance and inaction. Various health communication studies suggest that, for some people, avoidance is a means of coping. Using a personality-oriented model, Krohne differentiated between attending to a perceived threat (vigilance) and turning away from it (avoidance).¹⁷⁹ Miller and Mangan used the terms *monitors* (information users) and *blunters* (information avoiders) to label these two individual coping strategies.¹⁸⁰ Both investigations found that attention-oriented individuals (monitors) preferred more information in the midst of stress and suffered less when accessing information, whereas avoiders (blunters) preferred less information in the presence of stress and became even more distressed when additional information was provided to them.^{179,180}

Active curiosity

The second motivating catalyst in the e-Health engagement model is “active curiosity.” Case mentions curiosity, along with the terms “gratification” and “play,” as motivating concepts involved in the initiation of information-seeking, particularly in the context of information browsing.¹⁸¹ It is logical to consider curiosity as a driver of undergraduate information-seeking, as students are inherently curious and motivated to fill recognized knowledge gaps.

A study by Dutta-Bergman examined the attention that “web-surfers (explorers)” and “web-searchers (goal-drivers)” paid to the “completeness (thoroughness)” of web-based health information, finding that both types of students attended significantly to information completeness. In discussing these results, Dutta-Bergman stated:

“Given the great deal of control exercised by the consumer when surfing on the Internet, surfing is not an exact replica of passive television viewing or passive magazine reading. Active consumers, when in an Internet health information environment where they can make a free choice, are likely to click only on those articles that they are intrinsically motivated to read. Therefore, a certain level of curiosity and intrinsic motivation (involvement) is required for the consumer to click on a link and follow it to read the article.”¹⁸²

Dutta-Bergman’s point is relevant to the question of how students engage with web-based health information. Since the internet experience provides the user with significant power and choice, the user’s curiosity about particular web content are likely predictors of student e-Health information engagement.

Moderating Variables

The model next includes moderating variables that can promote or prevent

information use. According to Baron and Kenny, a moderator affects the direction and strength of the relationship between a predictor variable and an outcome variable.¹⁸³

Categories of moderating variables include: 1) *Personal*: psychological and demographic traits; 2) *Campus Environment*: physical and social assets and barriers that impact e-Health information-seeking behavior; and 3) *Website Environment*: site design, content relevance, and navigation interface.

In addition to following the motivating catalysts in the model, there are two other positioning possibilities for the moderating variables. For example, these variables might precede motivating catalysts, serving to prevent or promote the start of a coping strategy. Alternatively, these moderating variables might follow information-seeking behavior in the model, serving to affect information access and its use.

Personal Moderating Variables

Psychological characteristics

There are specific psychological concepts that Wilson considered to be key factors that promote or hinder information use. Festinger's cognitive dissonance theory states that conflicting thoughts, beliefs, or feelings held simultaneously create discomfort and that people are motivated to resolve that conflict.^{172,184,185} One way to resolve dissonance is to find additional information that supports the primary cognition. Sorrentino and Short note, however, that "...many people are not interested in finding information about themselves or the world...and do not give a hoot for resolving discrepancies or inconsistencies about the self."^{172,186}

Wilson connects the motivation to resolve discrepancies to the concept of *selective exposure*, the idea that people prefer information that reinforces their existing beliefs and avoid information that conflicts with their present understanding.^{172,187,188} Cotton explains that Festinger posited selective exposure as a means of reducing cognitive dissonance only under certain circumstances. If there is little dissonance, then obviously there is correspondingly limited motivation for selective exposure. Moderate dissonance sparks information-seeking that reduces dissonance and avoidance of information that creates conflict. Finally, if dissonance is too great to be reduced through selective exposure, this can prompt a person to change their thoughts, beliefs, or feelings to be consistent with the contrary information.^{189,190}

The concepts of cognitive dissonance and selective exposure are relevant concepts that may affect whether and how students use health information websites. For instance, undergraduates may continue to access information on the MyStudentBody website if they find content that resonates with existing beliefs or helps resolve conflicting ideas. On the other hand, students may choose to minimize their personal risk beliefs and avoid e-Health information that contradicts their risk perceptions.

The particular psychological characteristics of interest to this study include depression, anxiety, self-monitoring, locus of health control, and specific personality traits. I detail and discuss each characteristic, its relevance, and corresponding metric in Chapter III.

Demographic characteristics

There are also demographic characteristics that are potential moderating variables. For example, physical traits such as sensory deficits (i.e., visual, hearing, sensory, or dexterity challenges) can be barriers to information access and use.¹⁷² Those with other acute or chronic mental or physical conditions may also face challenges in accessing or using relevant health information.^{172,191} Despite an intrinsic motivation to find relevant e-Health information, health-challenged individuals can still be hindered by related barriers to access or use such as overly technical terminology, text-heavy layouts, or confusing navigation strategies.

Ayers and Kronenfeld examined U.S. Census data to explore the relationship between the presence of chronic conditions and the frequency of internet use to access e-Health information, finding that as the number of chronic health issues rose, the frequency of internet use to gather health information rose. Conversely, the authors found no association between having a particular chronic condition and the level of internet use for health information.¹⁹²

In a 2004 review of worldwide internet use for health information, Morahan reported that approximately 4.5% of all internet searches are for health information and that most users of online health information are searching for specific content because they or someone they know was diagnosed with a particular condition.¹⁹³ Finally, in a study of internet users, Houston and Allison found that survey respondents who reported illnesses were more frequent users of e-Health information compared to those

who did not report illnesses, and that they were more likely to discuss information found online with their clinician.¹⁹⁴

Researchers have identified education level a potential moderating variable that affects information-seeking and use. For example, Ippolito et al. found that college graduates were more likely to give up smoking following the publication of the Surgeon General's Report on Smoking. Similarly, Schuker et al. discovered a relationship between education level and reactions to government warnings about saccharin placed on soft-drink labels.^{172,195,196}

There has also been a great deal written about age, sex, race/ethnicity, and income and their association with accessing health information. Hess et al. analyzed data from the 2002-2003 Health Information National Trends Survey (HINTS), finding that generally the highest users of the internet for health information were those less than 65 years old, women, whites, and those with higher levels of income and education.¹⁹⁷ Connell and Crawford found that older men accessed far less health information than younger men, whereas older women in general, and older rural women in particular, accessed a significant amount of information throughout their lives, with little reduction in information-seeking as they aged. These researchers also found that women reportedly received more health information than men from all sources.¹⁹⁸

Demographic characteristics analyzed in my examination of undergraduate e-Health engagement include age, sex, race/ethnicity, family socioeconomic status,

academic class year, international status, work and volunteer status, social membership, and perceived mental and physical health status.

Campus Environment as a Moderating Variable

Another potential moderating variable in the model for undergraduate e-Health information behavior is the campus environment, which consists of physical and social assets and barriers to college health website use.

The campus environment in which students live could positively or negatively impact students' engagement in e-Health information. Potential physical assets and barriers include the quality and reliability of the campus internet connection (including internet speed and wireless connectivity); the perceived level of privacy in residence halls and common spaces; and standard environmental controls (i.e., lighting, temperature, noise). Potential social assets and barriers include endorsements of an e-Health program made by credible friends, peer leaders, faculty, and administrators; personal experience with those who have successfully or unsuccessfully used specific e-Health programs; the strategies used by student leaders and administrators to introduce and promote the program as a worthy resource; and perceived social norms regarding various health issues (e.g., alcohol use, stress, sexual assault) and related health website use. Together, a college's physical and social characteristics can create an environment that encourages or impedes students' access to and use of e-Health programs.

Website Environment as a Moderating Variable

The environment established by a website's format, color schemes, images,

content selections, technical tools, and navigation aids creates an online space designed to attract target audiences and to promote specific materials. The degree to which a website environment meets user needs is a potential moderating variable that promotes students' e-Health program engagement.

Site design

Website design is the arrangement, design, layout, and rotation of text, data, graphics, and related materials meant to enhance content interest, access, and comprehension.

Consumer researchers have identified presentation format (i.e., information design and layout) as an important factor in information consumption. Bettman and Kakkar, for example, presented shopping mall patrons with product information formatted with varying degrees of randomness and complexity. The investigators found that the strategies the participants used to acquire the desired information were "strongly affected by the structure of the information presented." In discussing their results, the authors state, "Even if information is available, if it is not easily processable it cannot be used by consumers."¹⁹⁹

Other website characteristics, including user-centered content (content relevance) and user-friendly navigation (navigation interface) are also pivotal factors affecting program adoption and sustained use. Mitra et al. found that college students preferred websites that are clear, understandable, relevant to their special interests, and do not contain "too many bells and whistles (i.e., use of elements such as streaming video,

audio, and pop-up screens)."²⁰⁰ Elements such as stable accessibility and functioning, intuitive navigation strategies, attractive page design, and clear and concise content are likely influencers of student website engagement.

The accessibility and credibility of information sources are also cited as critical factors in information-seeking and use.^{172,173} Cline and Haynes note that in the midst of ever-expanding health information-seeking on the internet, access remains unequal, use is hindered by design-related navigational challenges, and the quality and accuracy of on-line health information is uneven.²⁰¹ Still, according to Hess et al., the internet is becoming a preferred channel for health information, particularly among certain age groups. Their analysis of Health Information National Trends Survey (HINTS) data found that respondents 18 to 34 years old were more than ten times as likely, and those 35 to 64 years old were more than five times as likely, as those 65 years or older to report "a lot" or "some" trust in the internet as a health information resource.¹⁹⁷

Mediating variables

The next links in the chain of the e-Health information behavior model are the mediating variables, which can explain how or why effects occur.¹⁸³ In the case of e-Health behavior, the mediating variables of perceived risks and rewards and self-efficacy are key to understanding whether student e-Health information-seeking leads to e-Health engagement.

Perceived risk versus perceived reward: The model's first mediating variable is anchored in the concepts of risk and reward. If students perceive that the benefit of

accessing specific e-Health information is greater than the perceived risk, then they are more likely to access, use, and perhaps reuse such information. Wilson cites multiple components of perceived risk, based on work by Settle and Aireck,^{172,202} that are pertinent to students' e-Health information-seeking behavior:

- Performance risk: Is the website or information credible and accurate?
- Financial risk: Is the information affordable or accessible, or could it be accessed at less cost elsewhere?
- Physical risk: Is the information dangerous? Could compliance with offered recommendations cause harm?
- Social risk: Will the e-Health information or new knowledge impress or alienate friends and colleagues?
- Ego risk: Will the website or information improve the person's state of happiness or self-esteem?^{172,202}

From a similar consumer perspective, Murray suggests two additional perceived risks:

- Safety risk: Will the information change the person's perceived risk of harm?
- Time/convenience loss risk: Will accessing the e-Health information be inconvenient or make inefficient use of available time?^{172,203}

Murray goes on to describe the concept of risk as the likelihood of any negative consequence, including perceived uncertainty about the occurrence of a gain or loss.

Murray suggests that, from a consumer's perspective, the amount and nature of the perceived risk will determine that person's information-seeking behavior.^{172,203} If college students, as prospective information consumers, are potentially interested in protecting their health, then perceived risks (and, conversely, perceived benefits) may be predictive of their level of engagement with e-Health information.

Self-efficacy

The concept of self-efficacy, described as a sense of personal mastery or “confidence in one’s ability to take action and overcome barriers,”²⁰⁴ is a likely mediating variable in undergraduate health information use. This proposition assumes that students need to be confident that they can find the health information they need and effectively use that information to create benefit for themselves or a significant other. The volume and scope of research literature addressing self-efficacy is vast, though the amount of self-efficacy material relevant to student e-Health engagement is limited.

In a review of self-efficacy research that addresses self-regulation and motivation in the academic setting, Pajares notes that many researchers link self-efficacy to academic performance: Two studies conducted by Pintrich and colleagues are particularly relevant to my study. Through classroom observation, student interviews, and surveys, the researchers found that students who believed they were able of completing academic tasks used more cognitive and metacognitive strategies and persisted longer than students who lacked belief in their abilities. The authors also found a correlation between global self-efficacy and the use of cognitive strategies and self-regulation through the use of meta-cognition.²⁰⁵⁻²⁰⁷ Pintrich and DeGroot concluded that improved self-efficacy can increase cognitive strategies that lead to improved academic performance.^{205,206} Regarding engagement in online health education, students with confidence in their ability to use an e-Health program to their benefit may engage more regularly in e-Health content and apply the acquired knowledge and skills to

address their health needs.

Research involving self-efficacy and information-seeking offers insight regarding the role of self-efficacy in e-Health information behavior. In defining self-regulated learning as it relates to academic achievement, Zimmerman states that student self-efficacy or “agency” is a foundational part of the learning process: “Self-regulated learning strategies refer to the actions and processes directed at acquisition of information or skills that involve agency (self-efficacy), purpose, and instrumentality perceptions by learners.”²⁰⁸ In proposing a model that presents characteristics that encourage individuals to seek and process risk-related health information differently, Griffin, Dunwoody, and Neuwirth also argue that a sense of self-efficacy in health information seeking and processing is a key concept, considering its motivational properties.²⁰⁹ Tella assessed the information-seeking behavior of 600 undergraduates at the University of Botswana. Findings showed that self-efficacy was the variable most associated with information-seeking behavior. He also found that sex, academic discipline, and enjoyment of information-seeking were predictive of information-seeking behavior.²¹⁰

Several studies highlight the role that self-efficacy may play in the use of online health information. Wangberg used a two-group pre-test, post-test randomized control trial to assess an internet-based education program designed to promote self-reported diabetes self-care behaviors (blood glucose monitoring, diet management, exercise) among Norwegian adults (17–67 years) who reported low (LSE) or high (HSE) levels of

self-efficacy. Findings showed that self-efficacy improved in both LSE and HSE groups immediately after the intervention, but decreased in both groups at the one-month follow-up.²¹¹ Franco et al. assessed the efficacy of the online health education module, MyStudentBody Nutrition (MSB-N), using a three-group randomized control design involving 800 students from six universities. Findings showed that the groups receiving MSB-N were more likely to increase their social support and self-efficacy for dietary change.¹⁶ Finally, to investigate the relationship between self-efficacy, outcome expectancies (belief regarding the likely consequences of a behavior), behavioral intentions (behavioral aims), and actual behavior, Gao et al. surveyed 109 college students on these predictive measures prior to beginning an elective weight training class. Attendance and workout logs were used to measure completed behaviors. Findings showed that outcome expectancies initially played a stronger role than self-efficacy in predicting behavioral intention and ultimate exercise behavior, but self-efficacy was a stronger predictor midway through the program.²¹²

Information-seeking Behavior

The next component in the model is a set of information-seeking behaviors. Information-seeking behavior is purposeful accessing and use of information in order to satisfy a goal.¹⁷⁴ There are three modes of information-seeking that are relevant to the undergraduate population: *Active Search* involves individuals deliberately looking for information. *Passive Search* describes instances when unrelated search behavior (e.g., casual browsing) inadvertently results in information acquisition that is relevant to the

individual. *Passive Attention* defines activity in which no information-seeking is intended (e.g., watching television, listening to the radio, internet surfing), but information acquisition still takes place.¹⁷²

There is some evidence that particular demographic, social, or cognitive factors may influence information-seeking behavior. For instance, Johnson and Meischke found that personal health-related factors (i.e., demographics, direct experience, personal significance of a health condition, and personal beliefs regarding the condition) motivate information-seeking action.²¹³

A study by Whitmire explored patterns of information-seeking among undergraduates studying different academic disciplines. The researchers used the Biglan model of disciplinary difference (categorizing majors along three dimensions: hard/soft, pure/applied, life/non-life) and the College Student Experiences Questionnaire to analyze the information-seeking patterns of 5,175 undergraduates. The results showed that the greatest differences in information-seeking were found between students majoring in the pure versus the applied disciplines, with those in the pure disciplines exhibiting more information-seeking behaviors.²¹⁴

Information Processing and Use

The last component of the conceptual model is *Information Use*. Wilson points out that the fact that a particular situation requires information to fill a gap in knowledge, uphold values or beliefs, or change a mind-set, and that information sources are available to meet those needs, does not guarantee that the information will be processed

(i.e., “incorporated into the users’ framework of knowledge, beliefs, or values”) or used (i.e., “lead to changes in the users’ state of knowledge, behavior, values, or beliefs”).¹⁷²

Herein rests the core questions addressed by my study: What are the factors that predict undergraduate e-Health information engagement? If information need does not guarantee information use, then what can we learn about the college student audience to better meet their interests and needs and encourage increased e-Health information use?

Summary

In summary, to define engagement as it relates to students’ use of online health education, I reviewed the engagement research literature in the fields of higher education, classroom involvement, reading literacy, distance learning, commercial advertising and marketing, and online health education (e-Health). Common definitional attributes emerged, including time spent with content (attendance), motivated action, cognitive effort, emotional investment, social connection, and outcome focus. Attributes that I find most appropriate for consideration in this study include the elements of attendance or time-on-task with educational content, taken from higher education research;¹⁴⁸ Fredrick’s three dimensions of engagement (behavioral, emotional, and cognitive), taken from classroom involvement research;¹⁴⁴ and Guthrie’s definition of the engaged reader that includes cognitive, social, and motivation elements, taken from reading literacy research.¹⁵⁸ These attributes resonate with the ideal student e-Health experience and therefore are the basis for creating my definition of e-Health engagement which guided the selection of measures that are meaningful to e-Health

stakeholders.

The conceptual model of undergraduate e-Health information behavior, inspired by T.D. Wilson's 1995 general model of information behavior, includes the component parts and typical path for student online health behavior and details the dynamics involved in student e-Health engagement. This model, combined with insights from the engagement literature, provide the foundation for my study of undergraduate online health program engagement. The study assessed baseline student sociodemographic and psychobehavioral traits and website engagement following a nine-week e-Health website access period to investigate possible predictors of student e-Health engagement. The methods, results, and discussion chapters follow with related details.

Chapter III

METHODS

Study Design and Overview

The purpose of this dissertation is to identify effective methods for measuring undergraduate engagement with health education websites and to examine sociodemographic and psychobehavioral predictors of differential engagement. Rather than evaluating the website MyStudentBody.com (MSB), this study assesses the varying levels of MSB engagement and associated student characteristics.

This investigation used a multi-method design involving all class years of full- and part-time students (18-24 years) at Wheaton College in Norton, Massachusetts. After completing a baseline profile survey measuring sociodemographic and psychobehavioral characteristics (independent variables), 209 participants received email instructions to use the website MyStudentBody.com for a minimum of 90 minutes per week during the nine-week study period according to their personal interests and preferences. Following the nine-week viewing period, participants completed measures of website engagement including website activity logs and website engagement surveys (dependent variable). Some participants also participated in post-study focus group discussions. Study participants delivered all quantitative data via computer on-line. See Figure 2 for a diagram of the study components diagram and Figure 3 for the study timetable.

Figure 2

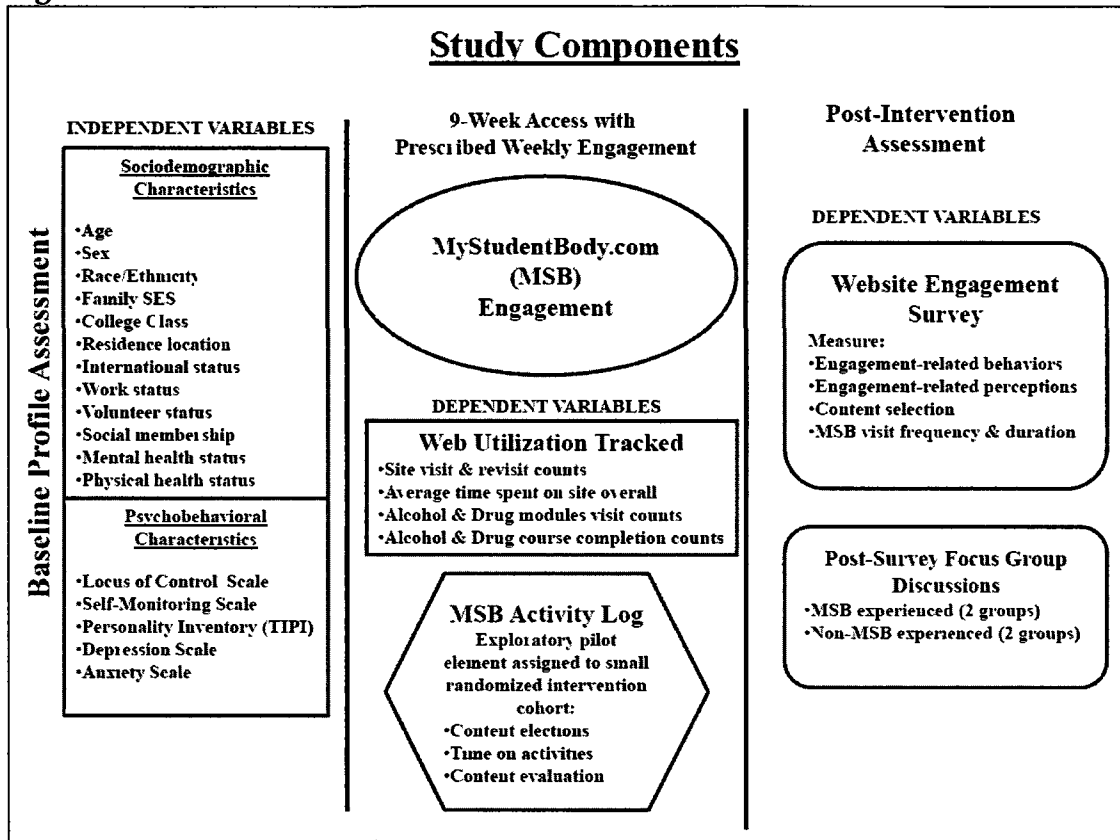


Figure 3

College Health Information Study Timetable 2009-2010									
Tasks	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
Phase I									
Pilot survey and log materials	■								
Participant recruitment		■							
Randomization and cohort assignment		■							
Phase II									
Study orientations									
Orientation refresher (optional)									
Baseline survey									
MSB website engagement				■	■				
Post-exposure engagement survey						■			
Phase III									
Focus group sessions									
Phase IV									
Data collection and cleaning									
Data review and analysis							■	■	■

Study Site

Wheaton College is a private, four-year liberal arts college located in Norton, Massachusetts. Founded in 1834 as a female seminary, Wheaton became coeducational in 1988. The college student population totaled 1,632 in fall 2009, with approximately 61% women, 76% white, non-Hispanic, and 5% international students. Students come from every state in the U.S. and almost 70 countries. See Table 1 for a complete student demographic profile.^{215,216} A residential institution, Wheaton's total costs (tuition, room and board) were \$49,155 in 2009-10.

Table 1

Wheaton College: Student Demographic Profile		
Total fall enrollment Fall 2009	1632	
Gender		
Female	1006	61.6%
Male	626	38.4%
Race/Ethnicity		
African-American	85	5.2%
Hispanic	69	4.2%
Native-American	4	0.2%
Asian-American	36	2.2%
Multiracial	43	2.6%
White	1234	75.6%
Unknown	85	5.2%
International	76	4.7%

Role of the Researcher

My role as Wheaton's Associate Dean of Health and Wellness and Director of Student Health Services sparked my decision to do this study. During my nearly 30 years in health care, education, and administration in hospitals, athletics, and schools, I

witnessed first-hand the unique challenges young people experience in making smart health-related choices. In my five years at Wheaton College, I have continued to work with students, parents, staff, and faculty to prevent or minimize the harsh consequences resulting from students' risky health behaviors. Like my colleagues at other institutions, I became interested in finding cost-effective health education tools that student populations would find attractive and that would encourage sustainable health-protective behaviors.

The strong interest in such tools is also the catalyst for the growing electronic health risk-reduction industry. But while many colleges spend significant money on web-based health education, it is unclear whether students are really buying in. For college administrators the question of product value is critical. As the chief college health advocate on my campus, I need to know whether students use the resources we offer and whether such resources contribute recognizable benefits to students and the institution.

My relationship with study participants and college administrators also shaped my role as a researcher. Wheaton is a small relational campus. I regularly engage students individually and collectively in person and through a variety of communication channels. According to unbiased reports from students, staff, and faculty, most students view me, my campus work, and the department positively. I believe a positive view of me and the Office of Health and Wellness may have contributed to student enrollment and persistence in the study. This positive relational

dynamic may also represent a potential biasing influence. I designed communication protocols to limit my direct student contact and mitigate potential relational bias. From a collegial perspective, my department's success contributes to the success of Wheaton's Student Affairs division and to that of the college as a whole. Hence, my supervisor and other colleagues were highly supportive of this project.

The Institutional Review Boards of Wheaton College and Boston University approved the study protocol. All participants received the contact information for the Wheaton (IRB) to allow direct notification of study-related issues. I made every effort to ensure the confidentiality of the participants and uphold the ethical standards for research in the social sciences and public health.

Study Sample

All Wheaton students actively enrolled full- or part-time, age 18-24 years of age and with regular computer-based internet access, were eligible to participate in this study (n = 1,632). Students living off-campus domestically or studying abroad were included as eligible study candidates.

Using the American Association for Public Opinion Research formula for calculating survey responses rate (minimal response rate),²¹⁷ the response rate for the pre-study survey (including the entire Wheaton student population who received email study invitations) was 12.8 percent. Of the original 209 students who responded to the campus-wide study invitation and completed the baseline survey, 138 participants, or 66.7 percent persisted through the nine-week study and completed the post-study

engagement survey.

I randomly selected an activity log subgroup to explore the effect of activity log use on website engagement. This sub-cohort of 35 participants received activity logs to use during the MSB website exposure period.

Recruitment, Incentives, and Engagement Boosters

The entire Wheaton student population (n = 1,632) received an email invitation to participate in the College Health Information Study (CHIS) during the two-week recruitment period in the fall 2009 semester. As an incentive for enrolling, students were eligible to win one of ten \$50 credit gift cards. Students acknowledged study eligibility and consented to participate in the study by clicking on the survey link embedded in the email message.

Students then took the online baseline survey. Completion of this survey established enrollment. *Survey Methods*, an online survey software and management company, managed invitation and reminder emails, survey delivery, data collection, and technical support. The company's management systems maintained information security and destroyed personal identifiers after data collection was completed.²¹⁸ Non-responders received reminder emails approximately every three to four days during the 14-day recruitment period.

The 209 students who completed the baseline survey received a follow-up email that provided a study overview and general instructions. To initiate the website access period, participants received a second email with a link to the MyStudentBody.com

website, their MSB access code, participation instructions, and related materials. As an incentive, participants who persisted through each study week were eligible for inclusion in weekly prize drawings for one of four \$25 credit gift cards. As noted, 138 participants completed the entire nine-week study.

Throughout the nine-week website exposure period participants received weekly *Engagement Boosters* in the form of email messages called *MyStudentBody Surfing Tip of the Week*. The goal of these booster emails was to encourage protocol compliance by highlighting potentially attractive MSB features. See Appendix A for an example of emailed Engagement Boosters. Content regarding website navigation, investigator contact information, incentive reminders, and other support aids were also included in booster emails.

To examine the effect of activity log use on college health website engagement, I instructed a randomized subgroup of 35 participants to document their website-related behaviors and beliefs on MSB Activity Logs during the study access period. Those randomized into the web activity log intervention group received *MSB Activity Logs* in their Wheaton mailboxes along with email notification and instructions.

Following completion of the nine-week website exposure, participants received an email invitation to complete the on-line post-engagement survey. As an incentive, students who persisted through the nine-week study and completed the post-engagement survey were eligible to win one of four \$250 credit gift cards. Non-responders received reminder emails approximately every other day during the seven-

day post-survey period.

Following the close of the post-survey, study students received emailed invitations to participate in one of two focus group sessions. As an incentive for focus group involvement, all participants received a \$25 gift card and extra points toward a chance to win one of the four \$250 gift cards. I also sent emails inviting students who were not involved in the study (i.e., study non-participants) to join one of two alternative focus groups. All non-study focus group participants received a \$25 gift card for their involvement.

MyStudentBody.com

I selected MyStudentBody.com operated by Inflexxion, Inc., in Needham, Massachusetts as the study website. Reasons for this choice included its focus on the full spectrum of student health risk concerns, its existing service contract with Wheaton College, and the company's willingness to participate in the study. Inflexxion agreed to support the study by providing free access to a dedicated MSB website for the study participants, MSB customization with Wheaton-specific resource and contact information, access to aggregated site utilization data, and routine technical support. In exchange, I agreed to offer Inflexxion access to my study findings and resulting recommendations. See Chapter I for a detailed description of MSB.

At the time of the study Wheaton College maintained a MSB subscription for approximately two years, using it primarily as an alcohol risk-reduction tool for students with high-risk alcohol infractions. Consequently, prior to this study, the vast

majority of Wheaton students had no exposure to MyStudentBody.com.

Quantitative Measures

Baseline Survey

Participants completed a 24-question internet-based baseline profile assessment that measured sociodemographic and psychobehavioral characteristics that may influence or predict student engagement with health information. Sociodemographic variables measured include age, gender, race/ethnicity, mother's/father's/guardian's education level, family income, class year, residence location (on or off campus), international status, work status, volunteer status, social membership (varsity athlete, club, student government, etc.), and perceived mental and physical health status. Psychobehavioral characteristics measured included depression and anxiety, using Harvard's HANDS Depression Screening Tool²¹⁹ and the Carroll-Davidson Generalized Anxiety Disorder Screen;²²⁰ internal versus external social monitors, using Snyder's Self-Monitoring Scale;²²¹ a revised measure of health locus of control by Levenson,^{90,91,222-224} and the Ten-Item Personality Inventory (TIPI) by Gosling et al.²²⁵ See Appendix B for the *Baseline Characteristics Survey*.

I considered multiple psychobehavioral measures for inclusion in the baseline survey. Criteria for final selection included the existence of strong empirical evidence as a potential predictor of health information use and behavioral change; established validity with undergraduate populations; and the tool's relative brevity and compatibility with other survey components. Ultimately, each measure needed to

contribute to a useful baseline survey that was acceptable to the study participants. Below is a brief review of the psychobehavioral measures that make up the baseline survey.

The Harvard National Depression Screening (HANDS)

It was important to include a measure of mental health status, considering the prevalence of student mental health challenges and their negative impact. Evidence cited in Chapter I suggests that mental health status can significantly influence students' health-related behaviors. I also identify psychological characteristics, including depression, under moderating variables in my conceptual model for student e-Health behavior.

The Harvard National Depression Screening (HANDS) is a ten-item scale that has proven internal consistency and validity.²¹⁹ Colleges across the country have successfully used the HANDS annually as part of National Depression Screening Day (NDS). Wheaton College has participated in NDS for approximately six years.

The Carroll-Davidson Generalized Anxiety Disorder Screen

Anxiety is also a relevant issue for the college population and is one of the psychological moderating variables in my model of student e-Health engagement. The Carroll-Davidson Generalized Anxiety Disorder Screen, with ten items, is another component of the NDS Mental Health Screening regularly used on college campuses to screen for anxiety disorders. The screen has proven internal consistency and validity.^{226,227}

Self-Monitoring Scale

The construct of self-monitoring, according to Snyder, is based on the idea that people differ in the extent that they observe and control their “expressive behavior and self-presentation.”²²⁸ People who are high self-monitors regulate how they express themselves and behave in public to create a desired public image and are highly responsive to social and interpersonal cues. Low self-monitors lack the ability or motivation to regulate their “expressive self-presentation” to meet interpersonal or social conventions.²²⁸⁻²³⁵ I hypothesized that self-monitoring is a possible predictor of student information engagement related to health risk, considering the importance of social acceptance and the influence that peers have on young adults. High self-monitors may also be responsive to engagement prompts from authority, depending on perceived peer norms and the perceived risks of noncompliance. Snyder’s Self-Monitoring Scales is an 18-item questionnaire that has proven internal consistency and validity.²³³ Considering the conceptual link between self-monitoring and student peer influence, self-monitoring is related to the social assets and barriers category in the campus environment segment of my model’s moderating variables section.

Multidimensional Health Locus of Control Scale

Personal mastery or locus of control refers to people’s belief in their ability to control or influence the outcomes they experience.²⁰⁴ The construct of health locus of control, developed by Rotter, Lefcourt and others, distinguishes between perceived internal control (controlled by self) and external control (controlled by others).²³⁶

Reviewing the literature on locus of control and health, Wallston and Wallston determined that locus of control predicts specific health behaviors including information seeking, taking medicine, maintaining a diet, and smoking cessation.^{89,91}

Health locus of control (HLC) describes the degree to which an individual believes their health is controlled by themselves (internal), “powerful others” (external), or by chance (i.e., luck or fate). The Multidimensional HLC Scale (MHLC) is a combination of the Wallston and Wallston HLC scale and Levenson’s Internal/External Control Scale. It consists of an 18-item Likert scale including three six-item subscales with proven internal consistency and validity.^{90,91,222-224,237} I chose the Internal and Chance subscales for this study (totaling 12 items), consistent with researcher Kenneth Wallston’s recommendations for use with a “generally healthy population.”²³⁷ Considering the evidence of the potential association between locus of control and self-efficacy,²³⁸⁻²⁴¹ the MHLC scale is linked to the self-efficacy element that I list as a mediating variable in my conceptual model.

Ten-Item Personality Inventory

Gosling, Rentfrow, and Swann created the Ten-Item Personality Inventory (TIPI) as a brief and convenient tool to assess the core personality traits of extraversion, agreeableness, conscientiousness, emotional stability, and openness to experiences.^{225,242-245} It is reasonably possible that these traits could influence student engagement with health education websites. The TIPI is a validated scale and has been used in a large and broad range of studies with college students.^{225,246} The Ten-Item Personality Inventory

links well with the personal traits segment of the moderating variable section of my conceptual model.

Web Utilization Data: MyStudentBody Traffic Reports

The *MSB Traffic Report* is a website systems tool that allows college administrators to monitor the number of total participant visits and revisits to the alcohol and drug website modules (no reports are available for other modules), the number of visits in a given time range by date, average number of visits by hour, and the average amount of time students spend on MSB.¹⁴⁰ I generated MSB Traffic Reports at the close of the website viewing period to analyze and compare aggregate utilization data with data from student engagement surveys, activity logs, and focus group discussions.

Website Activity Logs

There is evidence that the use of logs or journals positively affects students' engagement in both the classroom and online learning environments.²⁴⁷⁻²⁴⁹ To examine the impact of log-use on website engagement, I randomly selected a cohort of 35 participants to be part of a MSB Activity Log subgroup. The students received email instructions to use the activity log booklets during every MSB session for the nine-week study period. All other email communications received by this cohort matched those received by the general study population.

MyStudentBody Activity Logs were designed to bolster website engagement and measure content selection, time spent on site activities, and perceptions of content. The

logs were 41-page booklets that itemized every possible web-content element available for participant use (i.e., articles, stories, videos, tools, quizzes, etc.). Responses scales assessed *usefulness* (i.e., content had practical utility), *engagingness* (i.e., content inspired involvement), *attractiveness* (i.e., content inspired interest), *memorableness* (i.e., content was easily remembered), and *instructiveness* (i.e., content provided new knowledge). All other study participants used MSB as prescribed without using activity logs.

Website Engagement Survey

Following the nine-week website viewing period, students completed a 48-item web engagement survey that measured website-related behaviors and indicators of content engagement (i.e., planned behavior change, acquisition of new knowledge, re-visiting web-pages, sharing content with others, information-seeking beyond MSB). The MSB Engagement Survey also measured content selection and average frequency and duration of site utilization. See Appendix C for the *MyStudentBody Engagement Survey*.

Qualitative Measures

In exploring student engagement with college health websites, focus group research methods can uncover personal insights that reveal details of the student experience not measurable by quantitative methods and allow relevant group narratives to unfold. I used focus group discussions to examine student values, beliefs, opinions, and norms relating to health education website use.²⁵⁰

Focus Group Overview

Following the web engagement survey, all Wheaton students received email

invitations to participate in one of four focus groups. Participants received \$25 gift cards as payment. I organized two focus groups with study participants who completed the nine-week study and surveys (Groups A and B: “MSB-Experienced”) and two with study non-participants (Groups C and D: “MSB-Inexperienced”) to compare varying student perspectives on issues related to health education website engagement. The make-up of each focus group depended on students’ availability and willingness to participate and show up for their assigned session. Groups were limited to a maximum of ten participants.

Sessions ran for 90 minutes on one Sunday (Groups A & C) and Monday evening (Groups B & D) during the 2010 spring semester. A team of two experienced facilitators conducted each focus group session. I used facilitators with no relationship with Wheaton College, Wheaton students, MSB, or Inflexxion to minimize the potential for bias. The primary facilitator led the discussion, while the second facilitator operated the digital recording devices and took notes. All participants signed a participation consent form and completed a brief demographic questionnaire prior to the group discussion. Facilitators addressed participants using self-created pseudonyms to mask students’ identities in recordings and transcription records. See Appendix D for the focus group questionnaires and the MSB-Experienced and MSB-Inexperienced protocols.

Qualitative Analysis

Coding and Theme Analysis

I used the software NVivo 8 by QRS International²⁵¹ to code and analyze

recurrent focus group themes. NVivo allows the user to organize data into containers called “nodes.” A user may catalogue nodes into hierarchical structures called “Tree Nodes.” Tree nodes are organized from the more general “Parent Nodes” groupings to the more specific “Child Nodes.”²⁵²

To begin, I reviewed the audio recordings and transcripts for each focus group to create major topic categories (called “Parent Nodes” in NVivo) and subcategories (called “Child Nodes”) for analysis. Debriefing sessions with the primary facilitator provided added insights that informed the coding categories. At times, collective responses presented evident patterns or trends, some of which translated into emergent themes addressing student beliefs, behaviors, or recommendations related to health website use. I also found relevant ancillary topics (called “Free Nodes”) that I coded for analysis. Custom coding for core study participants (Groups A and B, MSB-Experienced) and non-participants (Groups C and D, MSB-Inexperienced) allowed for comparative analysis of the groups. Table 2 below lists the primary coding categories used for the focus group data analysis.

NVivo 8 also served as a data management tool.^{251,252} The software scanned and collated the information from the transcripts into the coding categories and subcategories to facilitate data management and analysis from multiple perspectives across the dataset. I compared the results of my qualitative analysis with the quantitative findings to formulate my study conclusions.

Table 2

Qualitative Analysis Codes	
Coding Categories for Groups A & B (Core Study Participants)	Coding Categories for Group C & D (Non-Core Study Participants)
e-Health Ed.: good idea/CHIS*	e-Health Ed.: good idea/XCHIS*
e-Health Ed.: bad idea/CHIS	e-Health Ed.: bad idea/XCHIS
Alternatives?/CHIS	Alternatives?/XCHIS
MSB-use/CHIS	Predicted MSB-use/XCHIS
Use frequency/CHIS	Health-info seeking frequency/XCHIS
Use timing/CHIS	Web use timing/XCHIS
Navigation strategy/CHIS	Navigation strategy/XCHIS
Stop at content/CHIS	Stop at content/XCHIS
Leave content/CHIS	Leave content/XCHIS
Liked most/CHIS	
Liked least/CHIS	
MSB influence certain behavior?/CHIS	MSB influence certain behavior?/XCHIS
Change recommendations/CHIS	Ideal health web features/XCHIS
Popular feature to add/CHIS	Popular feature to add/XCHIS
Other thoughts?/CHIS	Other thoughts?/XCHIS

*CHIS = College Health Information Student participants; XCHIS = Non-study participants

Quantitative Analysis

Analytic methods used to explore the impact of sociodemographic and psychobehavioral traits on MSB engagement included both numerical (i.e., mean, standard deviation, range) and graphical summaries (tables, bar graphs) of the univariate data, as well as bivariate and multivariate analyses. I performed statistical analysis using IBM’s SPSS Statistics 18.³⁹

Univariate Analysis

I examined each variable’s median, mode, response frequencies, and distribution patterns for an overview of baseline characteristics and website engagement trends. Bar graphs for the univariate data are available in Appendix F. Next, I compared

study *completers* (people who completed both the baseline survey and the post-study surveys) and *non-completers* (people who completed the baseline survey, but not the post-study survey) to identify significant demographic differences. After, creating a data dictionary, I made a list of analysis-worthy variables based on my review of the literatures on student health risk behavior and information-seeking, my conceptual model for e-Health behavior, and my professional experience as a college administrator. I then refined the number of outcome variables by testing certain variables against others using the Fisher's exact test or Spearman's rho, as appropriate, to identify variables that were highly associated with each other. Next, I analyzed selected predictor variables of interest against selected outcome variables to identify possible significant associations.

Comparative Analysis

I analyzed the pre- and post-study survey data to assess response frequencies, create data aggregation strategies as needed, and prioritize variables of interest. I also excluded variables that did not have sufficient variability in response to allow for analysis. Based on these factors, I gave priority focus to the variables listed in Tables 3 and 4.

All survey response data were nominal or ordinal, and therefore I used nonparametric tests such as Spearman's Rho, Fisher's Exact Test, and Mann-Whitney U, with p-values < 0.05 indicating statistical significance.

Comparative Analysis: Predictors of Key Outcomes

To further refine the list of predictors of MyStudentBody engagement, I examined priority outcome variables in search of highly correlated pairs so that I could eliminate redundant items. I then ran bivariate analyses of the remaining outcome variables against the priority predictor variables. I compared alcohol course completers (Q3) with drug course completers (Q4), using chi-square analysis and found that taking the MSB-Alcohol course was highly associated with taking the MSB-Drug course ($p < 0.001$), so I eliminated the MSB-Drug course variable from further analysis.

How often participants visited MSB-Alcohol (Q6) was highly correlated with self-reported frequency of visiting other website areas including MSB-Drug, -Nutrition, -Stress, -Tobacco, and -Sexual Health. Spearman's Rho values ranged from a low of .749 to a high of .895, all p -values $< .001$ (see Table 5). I eliminated all the other Q6 variables, analyzing the remaining Q6-Alcohol variable against the designated predictor variables.

Table 3

Predictor Variables			
Demographic Variables			
Variable Name	Response Options	Response Category Changes Made to Enable Analysis	Analysis Scoring
Sex	Male, Female, Transgender, Other	No Transgender and Other responses: categories eliminated	0 = Male 1 = Female
Race/Ethnicity	White, non-Hispanic; black non-Hispanic; Hispanic or Latino/a; Asian or Pacific Islander; American Indian	<ul style="list-style-type: none"> • White, Non-Hispanic • Other 	1 = White 2 = Other

	Alaskan Native or Native Hawaiian; Biracial or Multiracial; Other		
Perceived Physical Health Status	Excellent; Very good; Good; Fair; Poor; Don't know	Fair and Poor combined; "Don't know" responses eliminated	1 = Excellent 2 = Very good 3 = Good 4 = Fair/Poor
Perceived Mental Health Status	Excellent; Very good; Good; Fair; Poor; Don't know	Fair and Poor combined; one "Don't know" response eliminated	1 = Excellent 2 = Very good 3 = Good 4 = Fair/Poor
Class Year	1st, 2nd, 3rd, 4th year, Other	"Other" responses eliminated	1= 1st year 2 = 2 nd year 3 = 3 rd year 4 = 4 th year
Family Income	Less than \$25,000/yr \$25k - \$49,999/yr \$50k - \$74,999/yr \$75k - \$99,999 \$100k or more/yr; Unsure	Combined certain categories: <ul style="list-style-type: none"> • Lower = < \$25k-49,999 • Middle = \$50k-99,999 • Upper = \$100k or more • Unsure 	1 = < \$25k - \$49,999 2 = \$50k - \$99,999 3 = \$100k+ 4 = Unsure
Psycho-behavioral Variables			
HANDS Depression Screen (10 items)	None or little of the time; Some of the time; Most of the time; All of the time	<ul style="list-style-type: none"> • 0 – 8 = unlikely presence of major depressive diagnosis (MDD) • 9 – 16 = Symptoms consistent with MDD; presence likely • 17 – 30 = Symptoms strongly consistent with MDD 	1 = depression not likely 2 = depression likely 3 = depression very likely
Carroll-Davidson General Anxiety Disorder Screen	0 = No 1 = Yes	0-5# = Not indicative of GAD 6 or more# = Indicative	1 = not indicative of GAD 2 = should be

(10 items)		of GAD	evaluated for GAD
Health Locus of Control Scale (18 items)	Strongly disagree; Moderately disagree; Slightly disagree; Slightly agree; Moderately agree; Strongly agree	Internal: score on internal locus of control (LOC) Chance: score on chance LOC 6 – 18 = Low 19 – 36 = High	Subscale score is the sum of values circled. No need to reverse before summing Internal: 1 = low, 2 = high Chance: 1 = low, 2 = high
Self-Monitoring Scale (18 items)	True False	10 or lower = low self-monitor 11 or more = high self-monitor	1 = low 2 = high
Ten-Item Personality Inventory (TIPI)	1 = Disagree strongly 7 = Agree strongly	Label low or high on each trait according to individual scores. Some items are reverse scored.	For each personality trait the score was an average of two questions. Scored on the low-high continuum.

Table 4

Outcome Variables			
Variable Name	Response Options	Response Category Changes	Analysis Scoring
Q3: Did you complete the MSB-Alcohol Course?	Yes No	Not applicable (NA)	1 = No 2 = Yes
Q4: Did you complete the MSB-Drug Course?	Yes No	NA	1 = No 2 = Yes
Q6: As you spent time on MSB, how often did you visit the MSB-Alcohol module?	Never, Very Rarely, Rarely, Occasionally, Frequently, Very Frequently	Combined Very rarely & Rarely; combined Frequently & Very frequently	1 = Never 2 = Very rarely/Rarely 3 = Occasionally 4 = Frequently/Very frequently
Q15: How relevant to your life is the health information on MSB?	Not at all, A little, Moderately, Very, Extremely	NA	1 = Not at all 2 = A little 3 = Moderately 4 = Very

			5 = Extremely
Q20: To what extent will you benefit from information and resources in MSB-Alcohol?	Not at all, A little, Moderately, Very, Extremely	NA	1 = Not at all 2 = A little 3 = Moderately 4 = Very 5 = Extremely
Q22: To what extent will the information you learned from MSB-Alcohol decrease your drinking?	Not at all, A little, Moderately, Very, Extremely	NA	1 = Not at all 2 = A little 3 = Moderately 4 = Very 5 = Extremely
Q23: How likely are you to recommend MSB-Alcohol to someone who may have a problem with alcohol?	Not at all, A little, Moderately, Very, Extremely	NA	1 = Not at all 2 = A little 3 = Moderately 4 = Very 5 = Extremely
Q24: To what extent will you benefit from information and resources in the MSB-Sexual Health?	Not at all, A little, Moderately, Very, Extremely	NA	1 = Not at all 2 = A little 3 = Moderately 4 = Very 5 = Extremely
Q26: To what extent have you paid more attention to practicing safer sex as a result of your time on MSB-Sexual Health?	Not at all, A little, Moderately, Very, Extremely	NA	1 = Not at all 2 = A little 3 = Moderately 4 = Very 5 = Extremely
Q27: To what extent will the information you learned from MSB-Sexual Health help you negotiate safer sex?	Not at all, A little, Moderately, Very, Extremely	NA	1 = Not at all 2 = A little 3 = Moderately 4 = Very 5 = Extremely
Q28: How likely are you to recommend MSB-Sexual Health to someone who may have	Not at all, A little, Moderately, Very, Extremely	NA	1 = Not at all 2 = A little 3 = Moderately 4 = Very

questions about STDs, pregnancy, and other sex-related issues?			5 = Extremely
Q32: To what extent will MSB-Nutrition help you maintain healthy lifestyle habits (e.g., regular exercise, quality rest, nutritious eating)?	Not at all, A little, Moderately, Very, Extremely	NA	1 = Not at all 2 = A little 3 = Moderately 4 = Very 5 = Extremely
Q33: To what extent will MSB-Nutrition help you with body image concerns?	Not at all, A little, Moderately, Very, Extremely	NA	1 = Not at all 2 = A little 3 = Moderately 4 = Very 5 = Extremely
Q34: How likely are you to recommend MSB-Nutrition to a friend or other student?	Not at all, A little, Moderately, Very, Extremely	NA	1 = Not at all 2 = A little 3 = Moderately 4 = Very 5 = Extremely
Q37: To what extent will the information you learned on MSB-Tobacco help you quit tobacco use or support someone who wants to quit?	Not at all, A little, Moderately, Very, Extremely	NA	1 = Not at all 2 = A little 3 = Moderately 4 = Very 5 = Extremely
Q38: How likely are you to recommend MSB-Tobacco to another student?	Not at all, A little, Moderately, Very, Extremely	NA	1 = Not at all 2 = A little 3 = Moderately 4 = Very 5 = Extremely

Q40: To what extent did MSB-Drugs increase your knowledge about drugs, including prescription medications?	Not at all, A little, Moderately, Very, Extremely	NA	1 = Not at all 2 = A little 3 = Moderately 4 = Very 5 = Extremely
Q41: To what extent has MSB-Drugs helped you to pay more attention to your own use of alcohol and other drugs?	Not at all, A little, Moderately, Very, Extremely	NA	1 = Not at all 2 = A little 3 = Moderately 4 = Very 5 = Extremely
Q42: To what extent has MSB-Drugs helped you to know how to find support to deal with substance use issues for yourself or for a friend?	Not at all, A little, Moderately, Very, Extremely	NA	1 = Not at all 2 = A little 3 = Moderately 4 = Very 5 = Extremely
Q43: How likely are you to recommend the MSB-Drugs module to a friend or other student?	Not at all, A little, Moderately, Very, Extremely	NA	1 = Not at all 2 = A little 3 = Moderately 4 = Very 5 = Extremely
Q45: To what extent did MSB-Stress increase your knowledge of mental health and stress management issues	Not at all, A little, Moderately, Very, Extremely	Combine Very and Extremely	1 = Not at all 2 = A little 3 = Moderately 4 = Very & Extremely
Q47: To what extent will the information you learned from MSB-Stress help you maintain healthy stress levels?	Not at all, A little, Moderately, Very, Extremely	Combine Moderate, Very, and Extremely	1 = Not at all 2 = A little; 3 = Moderately, Very, & Extremely

Table 5

Comparative analysis: Q6 vs. frequency of visiting other modules		
Q6: As you spent time on MSB, how often did you visit MSB-Alcohol?		
Variable	Spearman's Rho	Significance
"...visit MSB-Drug?"	0.895	p <.001
"...visit MSB-Nutrition?"	0.797	p <.001
"...visit MSB-Stress?"	0.816	p <.001
"...visit MSB-Tobacco?"	0.749	p <.001
"...visit MSB-Sex?" "	0.877	p <.001

Finally, the variable "How relevant to your life is the health information on MSB?" (Q15) was highly correlated with all of the other priority outcome measures of engagement. Spearman's Rho values ranged from 0.295 to 0.484, with all p-values <0.001 (see Table 6). Therefore, I eliminated these remaining variables from the subsequent analyses.

Table 6

Comparative analysis: Q15 vs. listed variables		
Q15: How relevant to your life is the health information on MSB?		
Variable	Spearman's Rho	Significance
Q19: How frequently have you discussed specific MSB information (e.g., article, strategy, tool, activity) with other people?	0.324	P <.001
Q20: To what extent will you benefit from information and resources in MSB-Alcohol?	0.484	p <.001
Q22: To what extent will the information you learn from MSB-Alcohol decrease your drinking?	0.451	p <.001
Q23: How likely are you to recommend MSB-Alcohol to someone who may have a problem with alcohol?	0.428	p <.001
Q24: To what extent will you benefit from information and resources in MSB-Sexual Health	0.394	p <.001
Q26: To what extent have you paid more attention to practicing safer sex as a result of your time on MSB-sexual Health?	0.340	p <.001

Q27: To what extent will the information you learned from MSB-Sexual Health help you negotiate safer sex?	0.295	p =.001
Q28: How likely are you to recommend MSB-Sexual Health to someone who may have questions about STDs, pregnancy, and other sex-related issues?	0.462	p <.001
Q32: To what extent will MSB-Nutrition help you maintain healthy lifestyle habits (e.g., regular exercise, quality rest, nutritious eating)?	0.409	p <.001
Q34: How likely are you to recommend MSB-Nutrition to a friend or other student?	0.418	p <.001
Q38: How likely are you to recommend MSB-Tobacco to another student?	0.386	p <.001
Q40: To what extent did MSB-Drugs increase your knowledge about drugs, including prescription medication?	0.372	p <.001
Q41: To what extent has MSB-Drugs helped you pay more attention to your own use of alcohol and drugs?	0.334	p <.001
Q42: To what extent has MSB-Drugs helped you to know how to find support to deal with substance issues for yourself or for a friend?	0.340	p <.001
Q43: How likely are you to recommend the MSB-Drugs module to a friend or other student?	0.386	p <.001
Q47: To what extent will the information you learned from MSB-Stress help you maintain healthy stress levels?	0.392	p <.001
Q48: How likely would you be to recommend MSB-Stress to other students who seem stressed or have questions about emotional and mental health?	0.323	p <.001

Thus, three outcome variables – 1) “Did you complete the MSB-Alcohol course?” (Q3); 2) “As you spent time on MSB, how often did you visit MSB-Alcohol?” (Q6); and 3) “How relevant to your life is the health information on MSB?” (Q15) – were compared against the priority predictor variables (i.e., sex, race, perceived physical health status, perceived mental health status, class year, family income, HANDS Depression Screen, Carroll-Davidson General Anxiety Disorder Screen, Health Locus of Control Scale, Ten-

Item Personality Inventory) using bivariate non-parametric tests. Finally, following my bivariate analysis I performed multivariate analyses to test for interactive affects and significant correlations.

Chapter IV

Findings

Introduction

As outlined in Chapter III, I used multiple quantitative and qualitative tools to examine whether and how different Wheaton College undergraduates used and engaged with the MyStudentBody health education website. This chapter highlights the most meaningful findings, which point to a variety of conclusions and future considerations that I discuss in the final chapter.

Participant enrollment

The entire Wheaton College student population ($n = 1,632$) received email invitations to participate in the study. Non-responders received follow-up reminder emails regularly during the two-week recruitment period. I posted study recruitment fliers in residence halls and other high traffic campus locations and placed similar advertisements in the school newspaper. Pre-study survey completion constituted study enrollment. The response rate for the pre-study survey was 12.8 percent of the student population. Of those invited, 221 started the pre-survey, 209 completed the survey and were enrolled, 12 partially completed the survey and were deemed study ineligible, and eight invitees actively opted out of the study (did not take the pre-study survey and asked to be removed from consideration). Of the 209 participants who enrolled, 138 (66.7%) completed the study by accessing the MyStudentBody website during the nine-week viewing period and completing the post-study survey.

Quantitative Measures

Course Completion List

Study participants could access any of several alcohol or drug courses available in these two MSB topic modules. The Course Completion List is a generated report of participants who chose to take the drug or alcohol pre-test and/or post-test. Across the two topics combined, 19 study participants completed a pre-test and six completed a post-test; five post-test completers received a passing score of 80 or better.

Number of Student Visits: MSB-Alcohol Module

There were 164 student visits to the MSB-Alcohol module over the course of the nine-week study. Figures 4, 5, and 6 characterize the number of visits by students with various demographic traits. Females and non-athletes made the majority of visits to MSB-Alcohol; visits by third-year students (i.e., juniors) were infrequent.

Number of Student Visits: MSB-Drugs

There were 117 student visits to the MSB-Drug module during the website viewing phase. As was the case for the alcohol module, females and non-athletes made the majority of visits, as noted in Figures 7 and 9. Fourth year seniors made the greatest number of visits, as shown in Figure 8.

Figure 4

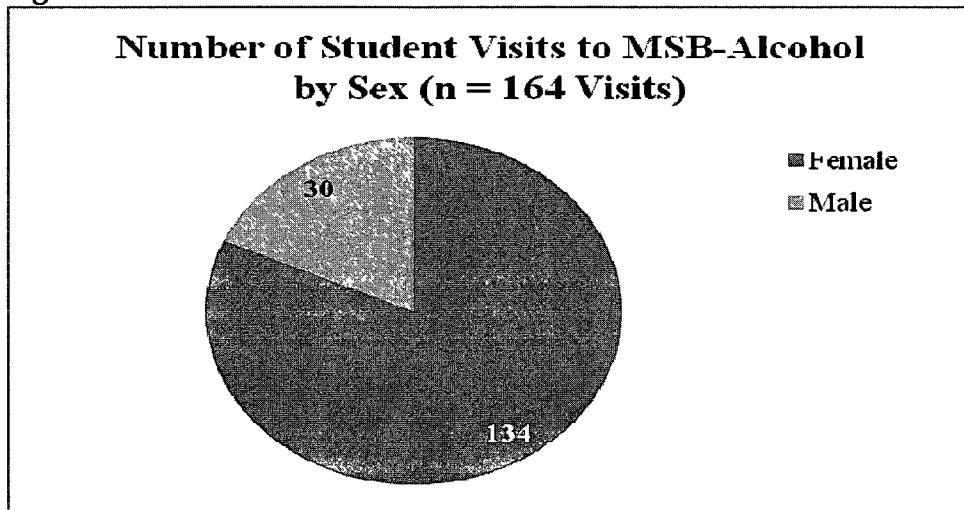


Figure 5

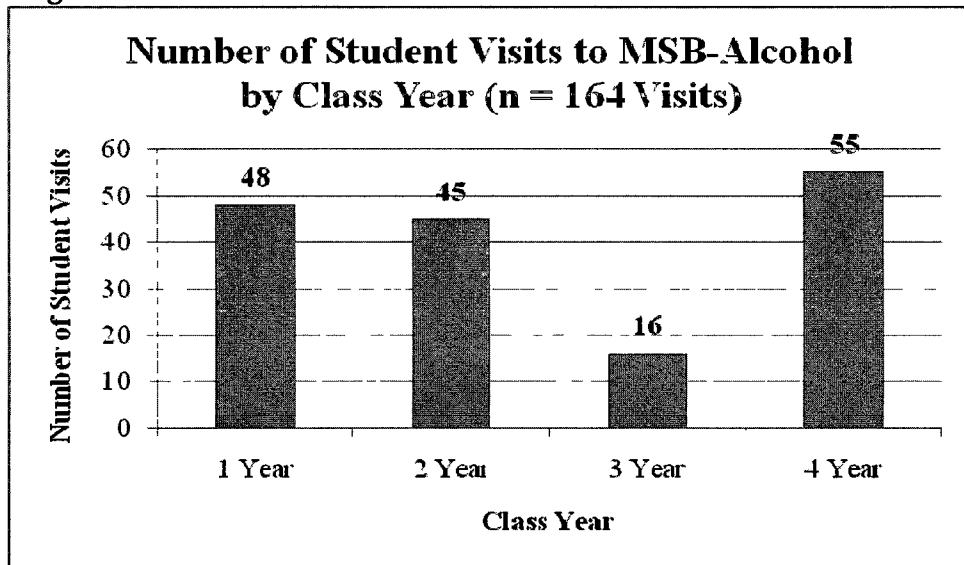


Figure 6

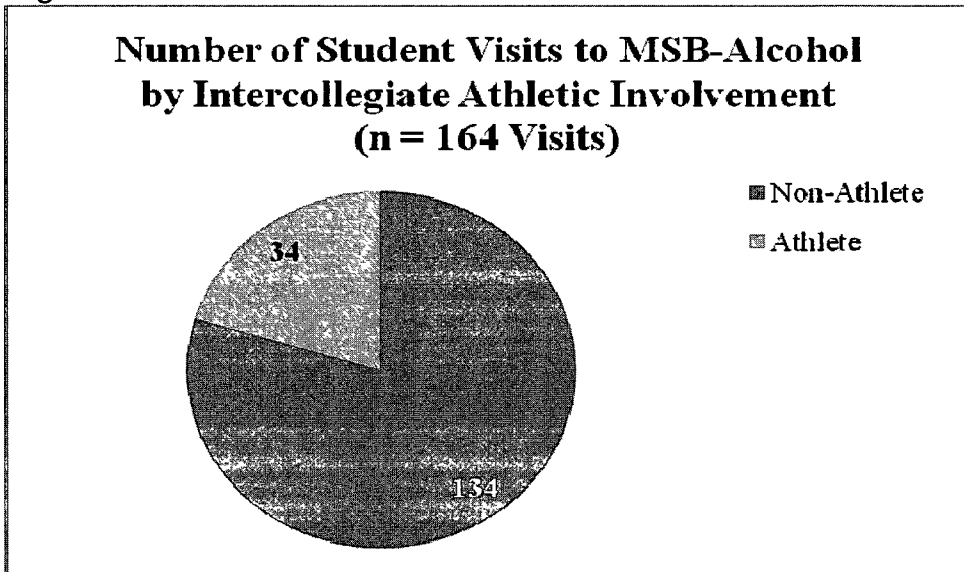


Figure 7

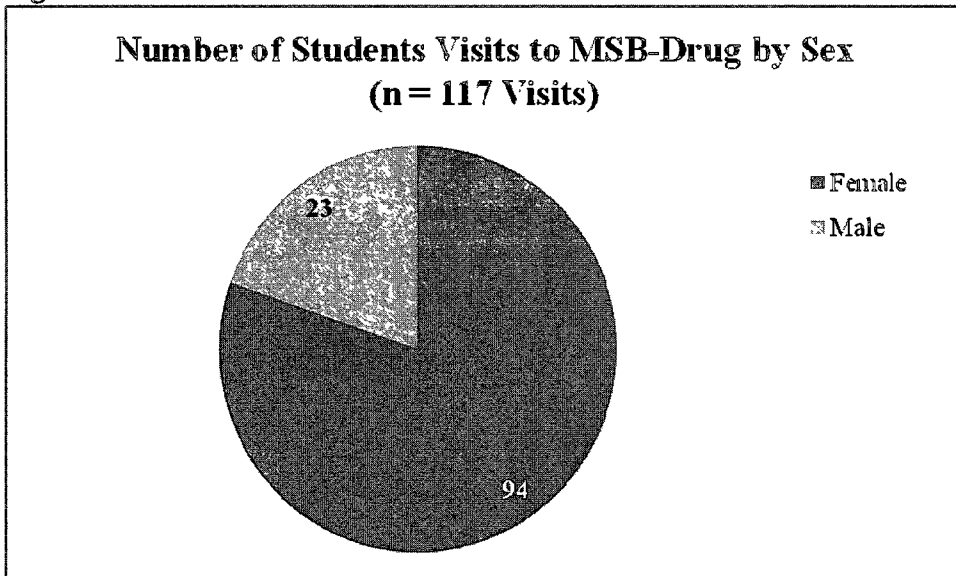


Figure 8

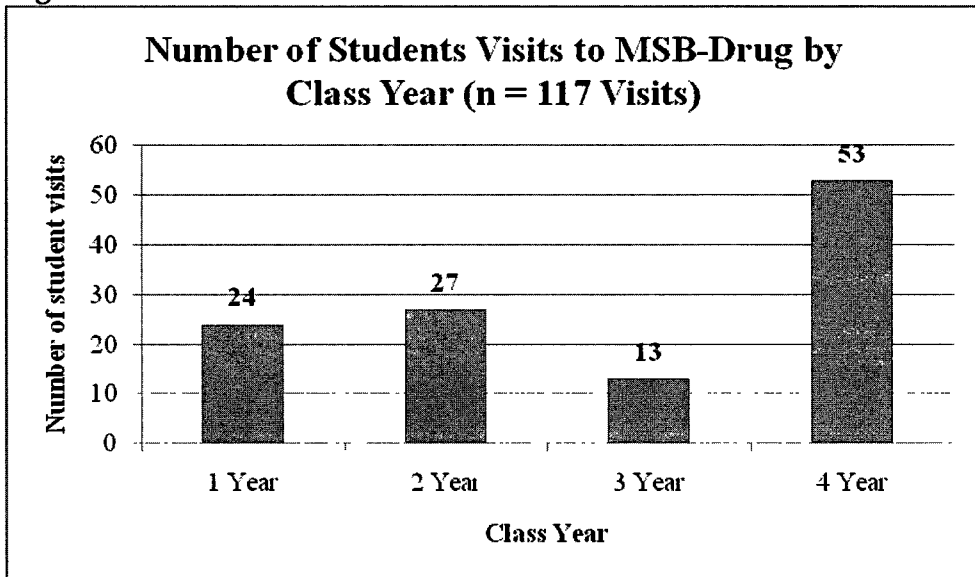


Figure 9

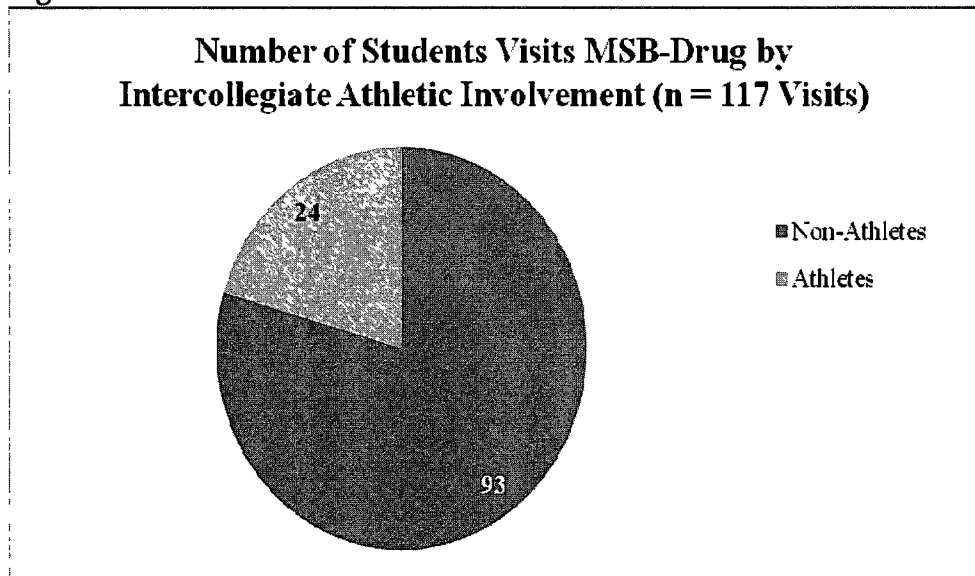
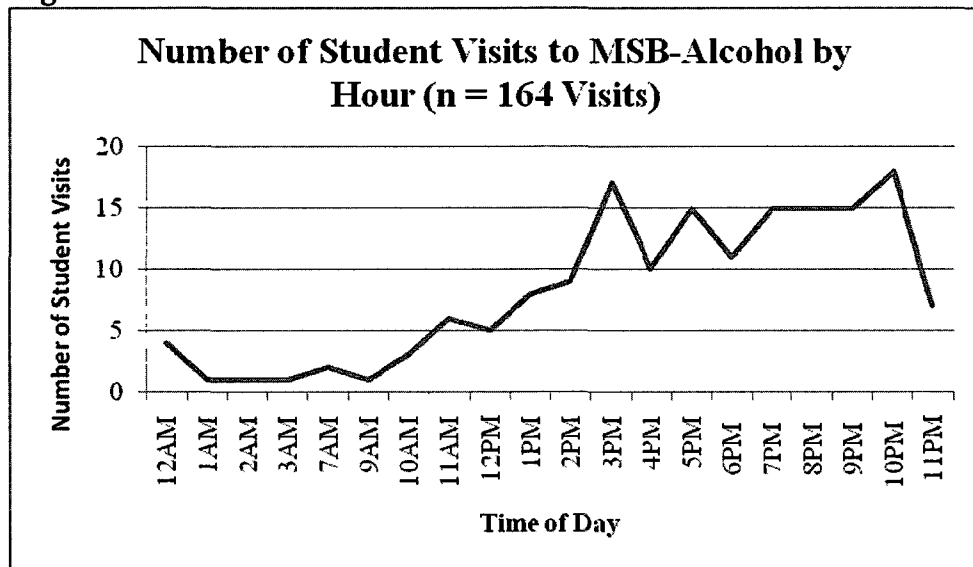


Figure 10



Number of Module Visits by Hour

Figures 10 and 11 chart the number of student visits to the alcohol and drug modules by time of the day. The majority of visits to MSB-Alcohol occurred between 3PM and 10PM, while the majority of visits to the drug module occurred between 3PM and 9PM. Not many students were viewing the MSB modules during the early morning hours, which many administrators (at least at Wheaton) presume to be a typical time for students to be online.

Number of Alcohol and Drug Module Visits by Date

Figures 12 and 13 present the number of alcohol and drug module visits by date. With both modules, the vast majority of visits occurred soon after the beginning of the website viewing phase, followed by a significant drop-off that continued through the end of the study period.

Figure 11

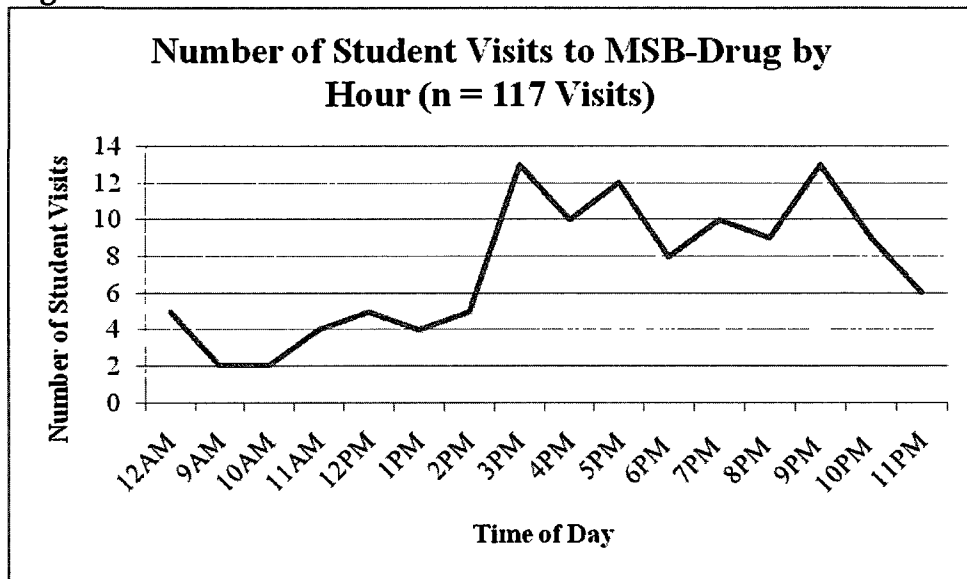


Figure 12

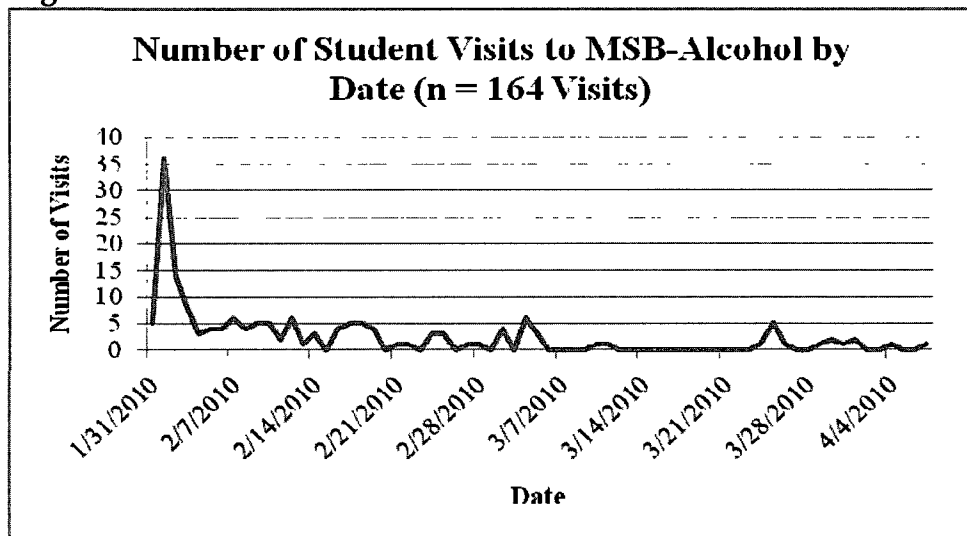
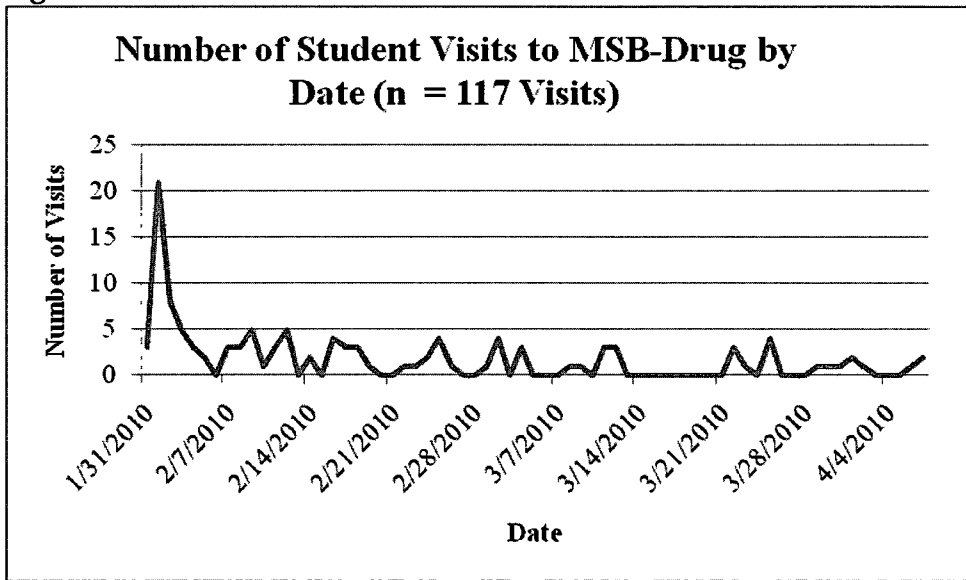


Figure 13



Number of Module Return Visits

Figures 14 and 15 show the number of return visits to the MSB-Alcohol and MSB-Drug modules. Many students returned to each module once or twice. Relatively few students returned three or more times.

Figure 14

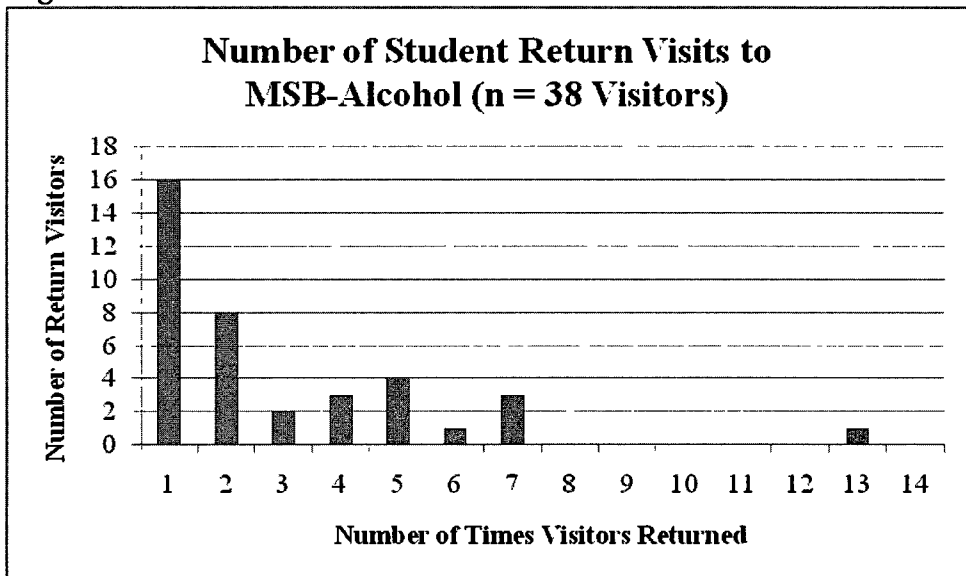
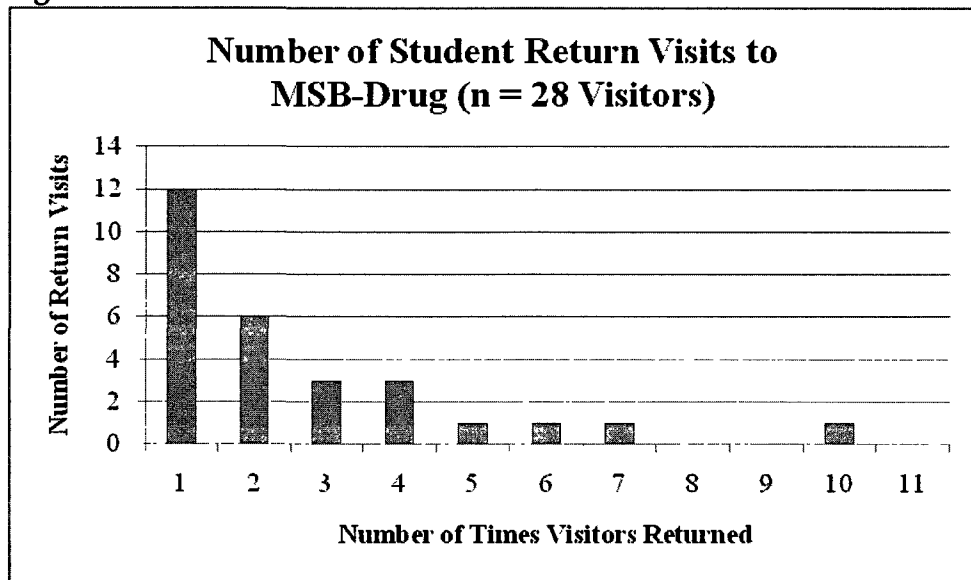


Figure 15



Baseline Characteristics/Predictor Variables

The pre-study baseline survey measured a broad spectrum of sociodemographic and psychobehavioral characteristics to create a profile of participant traits that could impact website health information engagement.

Demographic Variables

Table 7 presents the demographic profile of the study sample compared to Wheaton’s general student body. The majority of participants (students who completed both pre- and post-surveys) were female (75.7%) and white, non-Hispanic (85.5%). Approximately two-thirds were either sophomores or seniors (33.3% or 31.2%, respectively), and the mean age was 19.6 years.

With 61.6% of Wheaton’s general student population being female, the study sample had an over-representation of women. The percentage of study students

identifying with a racial/ethnic group was 14.5% compared to 24.4% of Wheaton’s general student body. With a relatively even distribution of Wheaton’s overall student population across the class years, the study sample had an over-representation of sophomores and seniors.²¹⁶ Women, white/non-Hispanic students, and those in the sophomore and senior classes were more likely to participate. Therefore the study sample is not wholly representative of the overall student population at Wheaton College and the risk of non-response bias exists.

Table 7

CHIS Study Completers' Demographics				Wheaton College: Student Demographics			
Demographics	Mean (SD)	n	%	Demographics	Mean (SD)	n	%
Age (years)	19.6 (1.19)	138		Age (years)	20 (1.0)	1632	
Sex				Sex			
Female		103	75.7	Female		1006	61.6
Male		33	24.3	Male		626	38.4
Race/Ethnicity				Race/Ethnicity			
White, non-Hispanic		118	85.5	White, non-Hispanic		1234	75.6
Non-White		20	14.5	Non-White		398	24.4
Class Year				Class Year			
1st Year		26	18.8	1st Year		428	26.2
2nd Year		46	33.3	2nd Year		441	27.0
3rd Year		23	16.7	3rd Year		368	22.5
4th Year		43	31.2	4th Year		395	24.2

As shown in table 8, study non-completers (students who started the pre-study survey but did not complete the post-study survey) were comparable in some respects to study completers. The majority of non-completers were female (78.3%) and white, non-Hispanic (83.1%). In terms of class year, the largest percentage of non-completers were sophomores (43.4%); 19.3% were first-year students, 21.6% were juniors, and 15.7% were seniors. The larger percentage of sophomores and smaller percentage of seniors

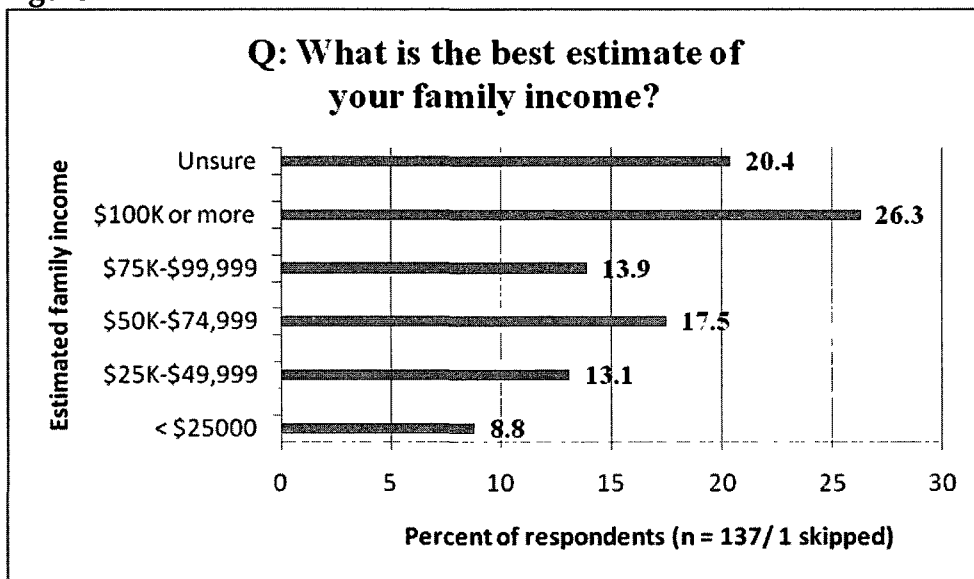
among non-completers is the most prominent difference from the study completers. It is unclear whether the demographic difference represents an important sampling bias.

Table 8

CHIS Study Completers' Demographics				CHIS Study Non-completers' Demographics			
Demographics	Mean (SD)	n	%	Demographics	Mean (SD)	n	%
Age (years)	19.6 (1.19)	138		Age (years)	19.5 (1.06)	83	
Sex				Sex			
Female		103	75.7	Female		65	78.3
Male		33	24.3	Male		18	21.7
Race/Ethnicity				Race/Ethnicity			
White, non-Hispanic		118	85.5	White, non-Hispanic		69	83.1
Non-White		20	14.5	Non-White		14	16.9
Class Year				Class Year			
1st Year		26	18.8	1st Year		16	19.3
2nd Year		46	33.3	2nd Year		36	43.4
3rd Year		23	16.7	3rd Year		18	21.6
4th Year		43	31.2	4th Year		13	15.7

I focused on the variable of *estimated family income*, given its variability and the significant body of literature linking income and health risk in the general population. Not surprising for a selective liberal arts college, as shown in Figure 16, the largest percentage of participants reported a family income in the “\$100,000 or more” category (26.3%). The category “Unsure” had the next largest percent of respondents; this category was not included in subsequent analyses. I aggregated the other categories into low (<\$25k-49,999), medium (\$50k-99,999), and high income (\$100k or more) groups.

Figure 16



I also considered perceived general health and physical and mental health status as potential predictors of student website engagement; Figures 17, 18, and 19 present percentages for these three variables. Most participants viewed their general, mental, and physical health as excellent to good. I combined the "Fair" and "Poor" responses. Tables for all other demographic variables are available in Appendix E.

Figure 17

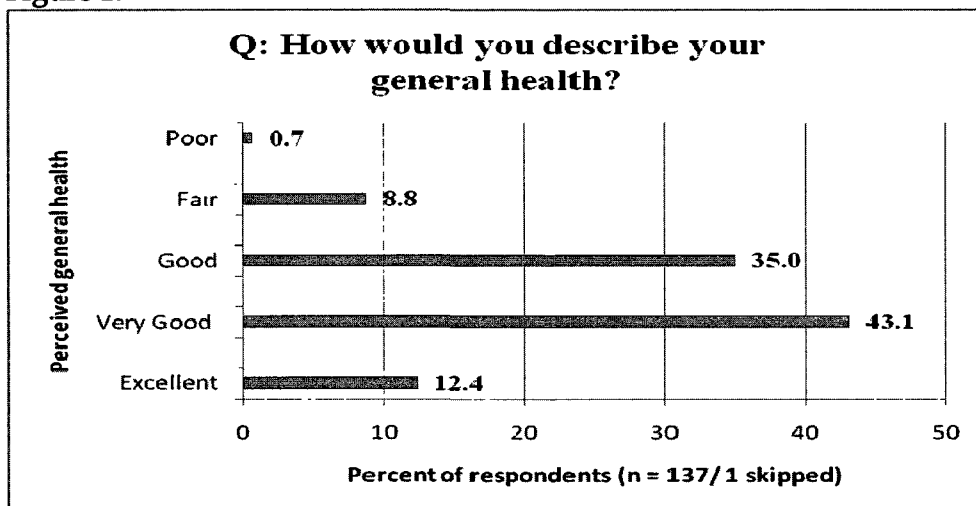


Figure 18

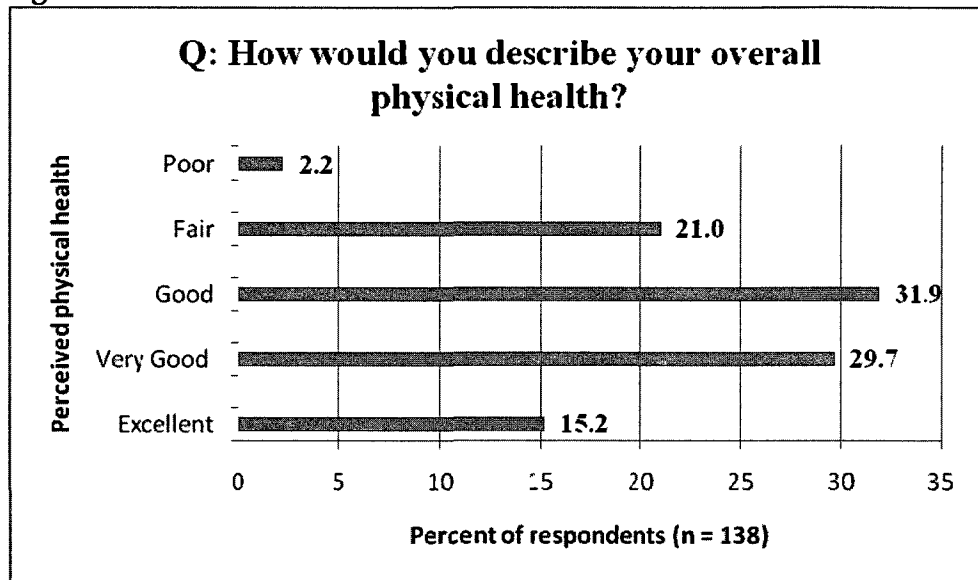
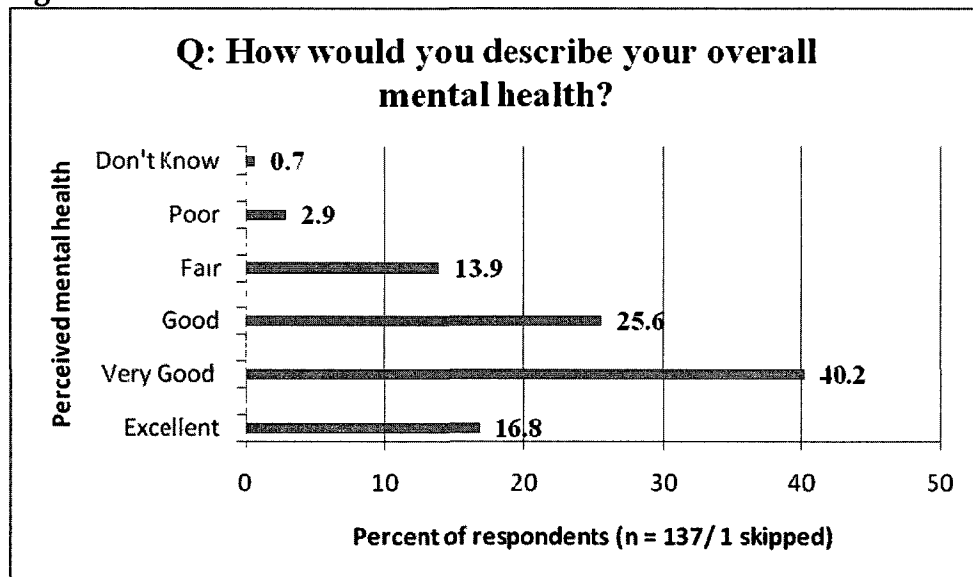


Figure 19



Study Completers vs. Non-Completers

Of 221 participants who completed the baseline survey, 138 fulfilled their entire study obligation by persisting through the nine-week website access period and completing the post-study survey; 83 students dropped out and did not complete the

study. To determine whether there was a significant difference between study “completers” and “non-completers,” I performed bivariate analyses to compare the groups’ baseline survey data. I found no significant differences between study completers and non-completers for sex, race/ethnicity, family income, class year, international status, club/organizational affiliation, grade-point average, or athlete status. Using Fisher’s Exact Test, I did find a statistically significant difference between study completers and non-completers on the basis of sexual orientation. As noted in Table 9, a far higher percentage gay/lesbian/bisexual/unsure (GLBU) students completed the study ($p = 0.004$).

Table 9

Comparing Study Completers & Non-Completers by Sexual Orientation				
	Heterosexual		Gay/Lesbian/ Bisexual/Unsure	
	Frequency	Percent	Frequency	Percent
Study Completers (n=138)	118	59.3	20	90.9
Study Non-Completers (n=83)	81	40.7	2	9.1

$p = 0.004$

As noted in Table 10 below, on average, study completers reported higher levels of general health than participants who did not complete the post-survey. A Mann-Whitney U Test showed this difference to be statistically significant ($p = 0.039$)

In summary, proportionally more study completers identified as gay/lesbian/bisexual/unsure, and more completers reported higher levels of general health, but overall there was little difference between students who participated in all parts of the study (i.e., completers) and those who took the pre-study survey but did not

persist through the web-site access phase and complete the post-study survey (i.e., non-completers).

Table 10

Comparing Study Completers & Non-Completers by Perceived General Health		
General Health	Count	Mean Rank
Study Completers	137*	116.9
Study Non-Completers	83	99.9
Total	220	

*1 skipped; p = 0.039

Psychobehavioral Variables

The screening tools selected to examine participant’s psychobehavioral traits included measure of depression, anxiety, health locus of control, self monitoring, and five core personality traits.

Harvard National Depression Screening (HANDS)

According to participant responses to the baseline Harvard National Depression Screening (HANDS), most students (71.0%) scored in the category “depression not likely,” as noted in Table 11 below.

Table 11

Univariate Summary of Scored Depression (HANDS)		
HANDS Score	Frequency	% Respondents n =138
Depression not likely	98	71.0
Depression likely	27	19.6
Depression very likely	7	5.1
Missing	6	4.3

Carroll-Davidson General Anxiety Disorder Screen

As shown in Table 12, most participants (64.4%) who completed the survey's general anxiety screen received scores in the category "not indicative of general anxiety disorder (GAD)."

Table 12

Univariate Summary of General Anxiety Disorder (GAD) # Level Carroll-Davidson GAD Screen		
C-D GAD Screen Score	Frequency	% Respondents n = 138
Not indicative of GAD	93	67.4
Indicative of GAD	39	28.3
Missing	6	4.3

Multidimensional Health Locus of Control (MHLC) Scale

Most participants scored high for *internal* health locus of control (92.8%) and low for *chance* health locus of control (58%), meaning more respondents believed that they control their health rather than luck or fate. Table 13 shows the respondents' MHLC scores.

Table 13

Univariate Summary of Internal & Chance Health Locus of Control MHLC Scales					
Level of Internal LOC			Level of Chance LOC (n = 138)		
	Frequency	% Respondents (n = 138)		Frequency	% Respondents (n = 138)
Low Score	9	6.5	Low Score	80	58.0
High Score	128	92.7	High Score	56	40.6
Missing	1	0.8	Missing	2	1.4

Self-Monitoring Scale

As discussed earlier, according to Snyder, high self-monitors change their outward expression and behaviors to create a desirable self-image and meet social expectations and norms. Low self-monitors have less ability or desire to alter their public expression and behaviors on behalf of social expectations.^{228-230,235} Study participants' self-monitoring scores suggest a relatively even split between low and high self-monitors, Table 14.

Table 14

Univariate Summary of Scores on Self-Monitoring Scale		
Score	Frequency	% Respondents (n = 138)
Low	68	49.3
High	66	47.8
Missing	4	2.9

Ten-Item Personality Inventory (TIPI)

The TIPI survey items assessed students' extraversion, agreeableness, conscientiousness, emotional stability, and openness to experiences. According to the median noted in Table 15 below, more respondents scored in the higher ranges of each of these measures.

Table 15

Univariate Summary of Personality Trait Scores Ten-Point Personality Inventory (TIPI)[±]					
	Extraversion	Agreeableness	Conscientiousness	Emotional Stability	Openness to Experience
n	136	137	136	138	138
Missing	2	1	2	0	0
Mean	4.5	5.5	5.5	4.7	5.5
Median	4.5	5.5	5.5	5.0	5.5
Std. Dev.	1.7	0.9	1.1	1.4	1.1

[±]Data recorded on a 1-7 Likert scale, with 1 = disagree strongly and 7 = agree strongly

Engagement Characteristics/ Outcome Variables

Website Engagement Survey

The post-study Engagement Survey measured self-reported MyStudentBody website utilization, content selections, and related behaviors and perceptions that serve as indicators of MSB engagement.

Website Utilization

Two key survey items get to the core of web content use and engagement: site access and duration. If students do not log on to a health education website or stay there for some significant length of time, there can be little or no engagement and little chance of behavioral change or risk reduction. Figures 20 and 21 present the responses for these two key questions. I asked students, how many times per week, on average they visited MSB. Of the 137 who responded, 48.2% reported “never,” meaning they did not return after their initial visit. Of the 131 respondents who answered, 64.1% reported that their average MSB session lasted 15 minutes or less. These are critical findings. Clearly, widespread student non-use limits further examination of the engagement indicators and predictors.

Figure 20

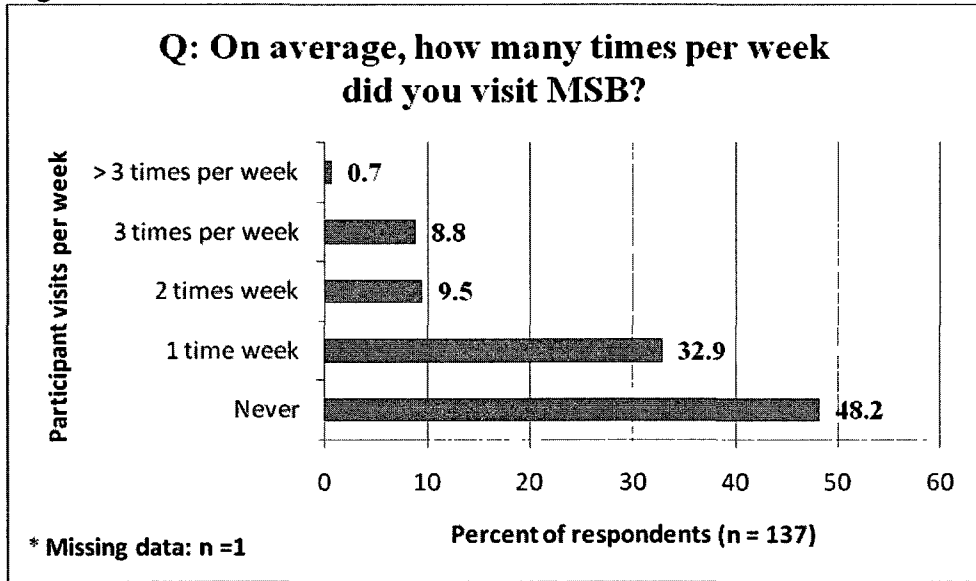
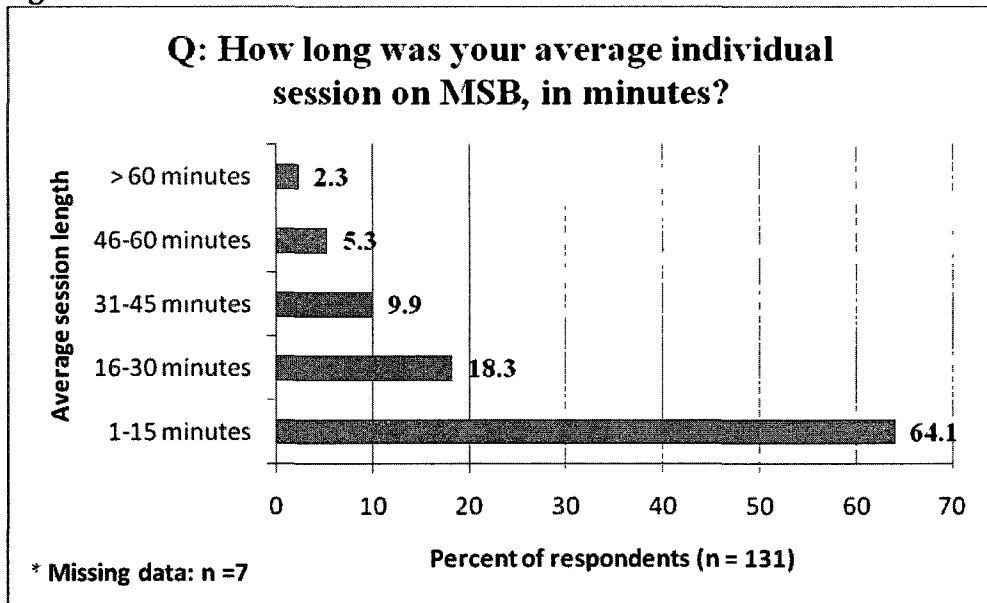


Figure 21



Alcohol and Drug Courses

The alcohol and drug courses on MSB are marketed to and used by colleges and universities as key components of a comprehensive health education and harm reduction program. Many institutions mandate their use by high-risk populations (e.g.,

freshmen, Greeks, athletes) and track compliance. In this study, taking the courses was voluntary. Given the choice, as noted in Figures 22 and 23, 70.1% did not take the alcohol course and 78.5% did not take the drug course.

Figure 22

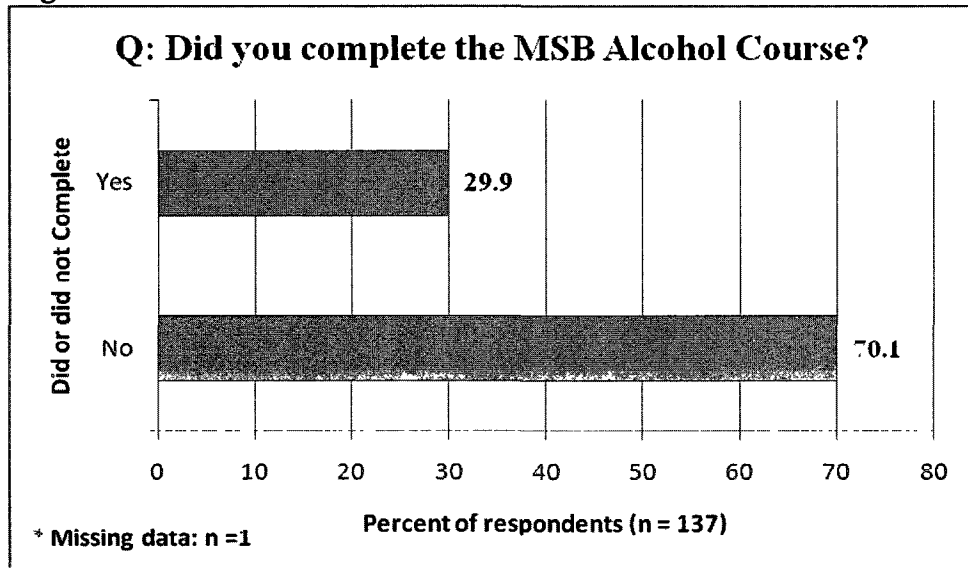
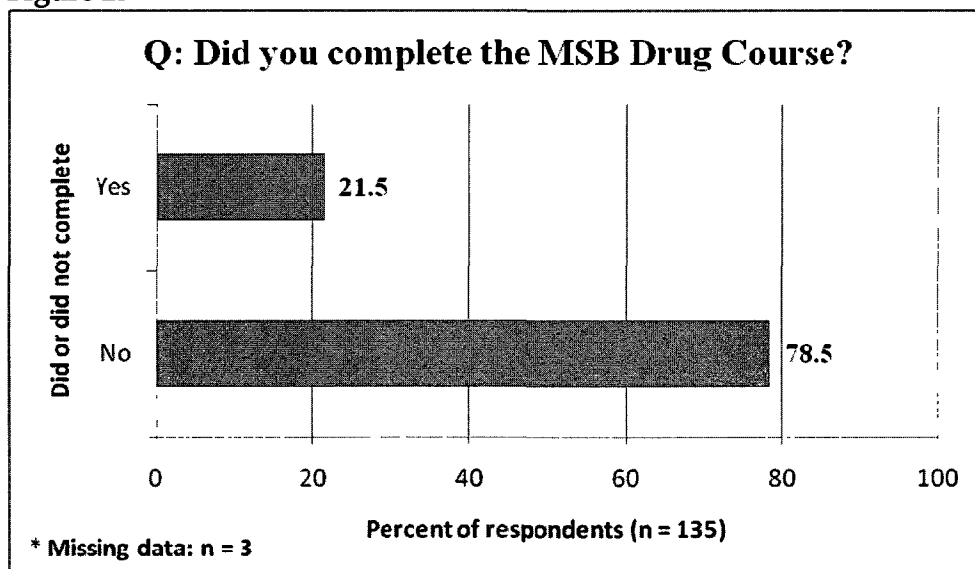


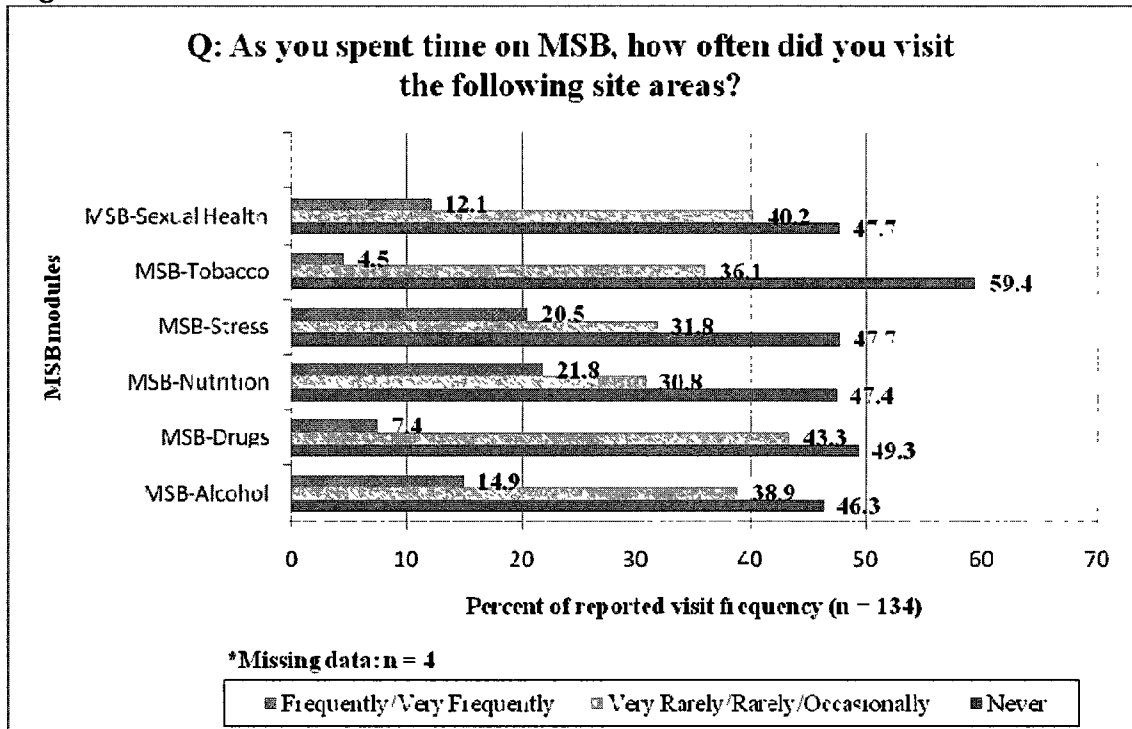
Figure 23



Visits to MSB Modules

How respondents reported their time spent visiting each of the six individual MSB modules offers some insight into content preferences. Between 46.3% and 59.4% of the respondents reported never visiting any of the modules. MSB-Tobacco had the greatest percent of “site avoiders” (Never=59.4%). As shown in Figure 24, MSB-Nutrition (21.8%) and MSB-Stress (20.5%) had the greatest percentage of participants reporting visiting “frequently” or “very frequently.”

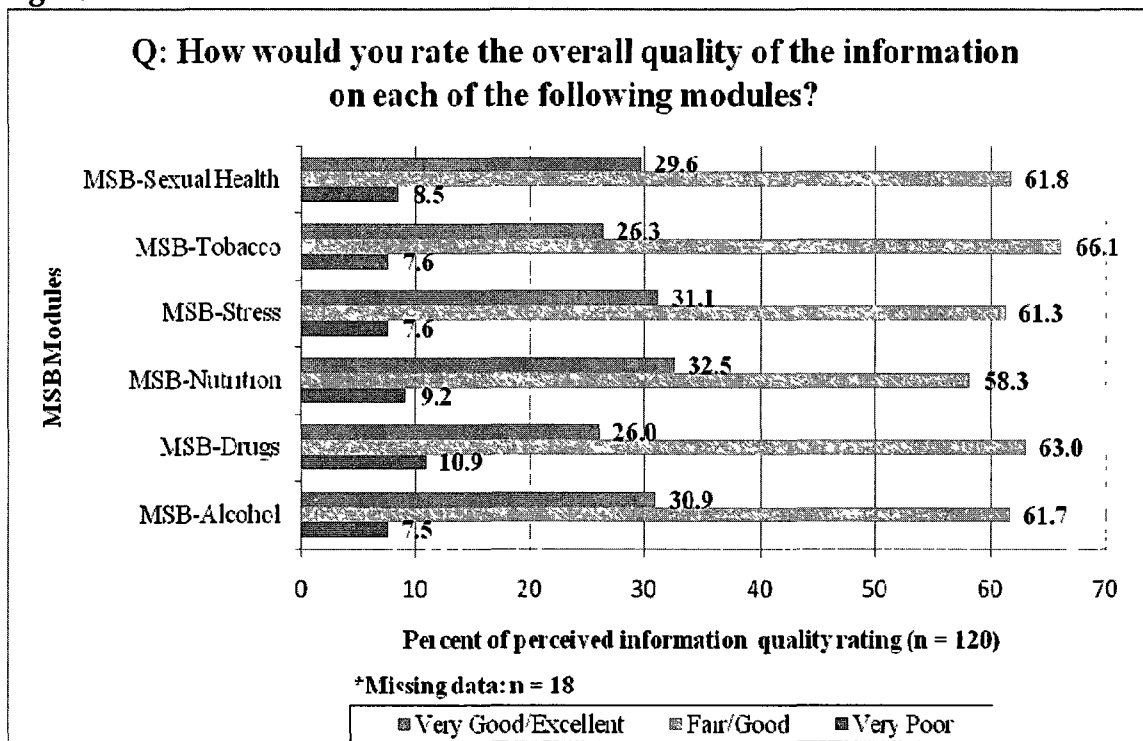
Figure 24



Module Quality

Student perceptions of web content quality are another important engagement indicator. In addition, assessment of specific site areas can be indicative of personal preferences for specific topics and interest in certain content. Figure 25 presents respondent data regarding perceived quality of individual MSB modules. The majority stated that each module was “fair” or “good” in quality, ranging from 58.3% (MSB-Nutrition) to 66.1% (MSB-Tobacco). Slightly more participants reported finding MSB-Nutrition (32.5%) and MSB-Stress (31.1%) to be of “very good” or “excellent” quality.

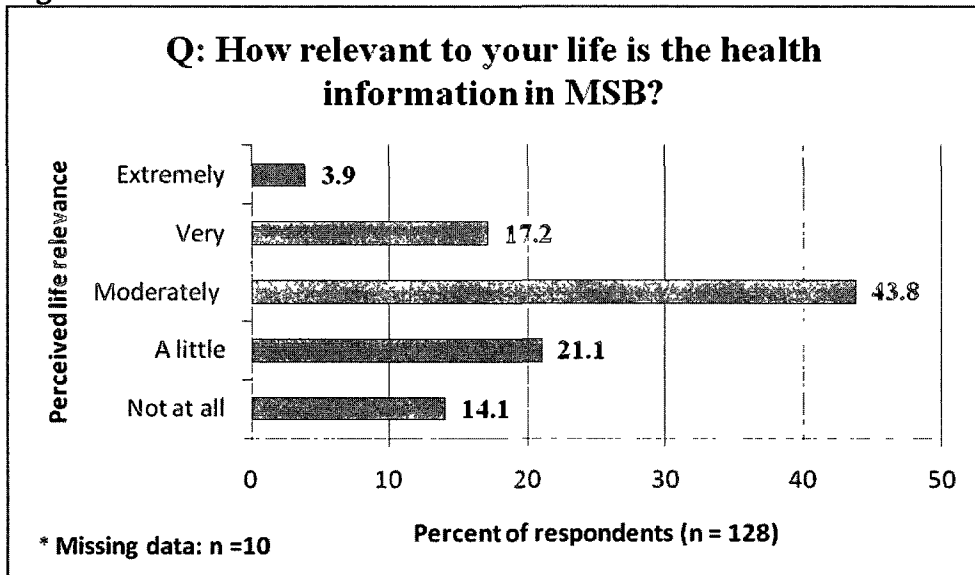
Figure 25



Content Relevance

When asked how relevant MSB information was to their life, 43.7% reported that it was “moderately” relevant, while a combined 21.1% reported that MSB was “very” or “extremely” relevant. Those reporting MSB to be “not at all” or “a little” relevant totaled 35.2% (Figure 26).

Figure 26



Indicators of Engagement Activity

To examine student website engagement, I included survey items that measured behaviors presumed to be indicative of substantive use, interest, and involvement in MSB content, such as revisiting MSB content; new information-seeking inspired by content use; and new actions sparked by MSB content use, including joining a related organization or discussing MSB content with others. Figures 27, 28, 29, and 30 provide respondent data for these survey items. Across the measures, the highest percentage of

respondents reported “never” or “rarely” performing these web-engagement types of activities.

Figure 27

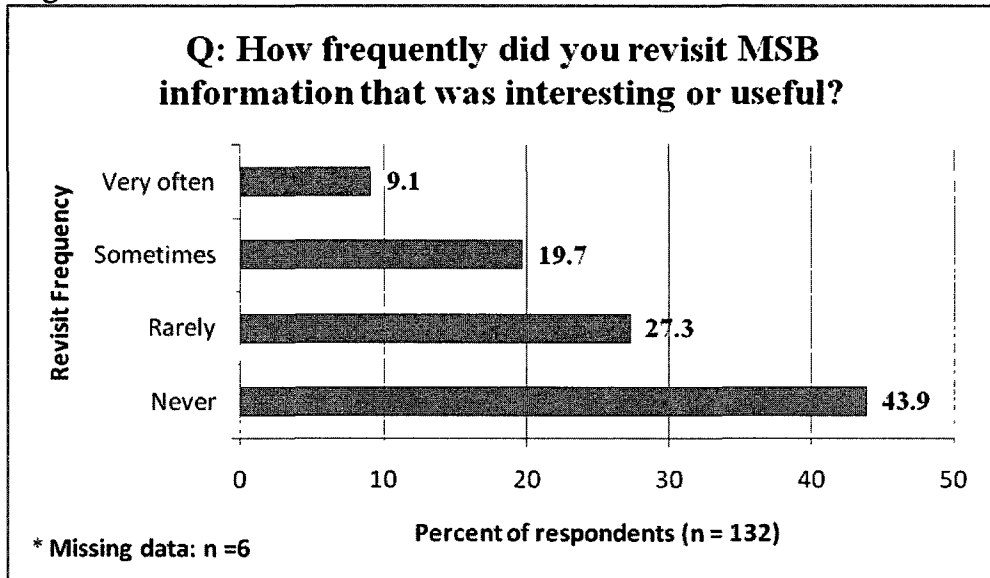


Figure 28

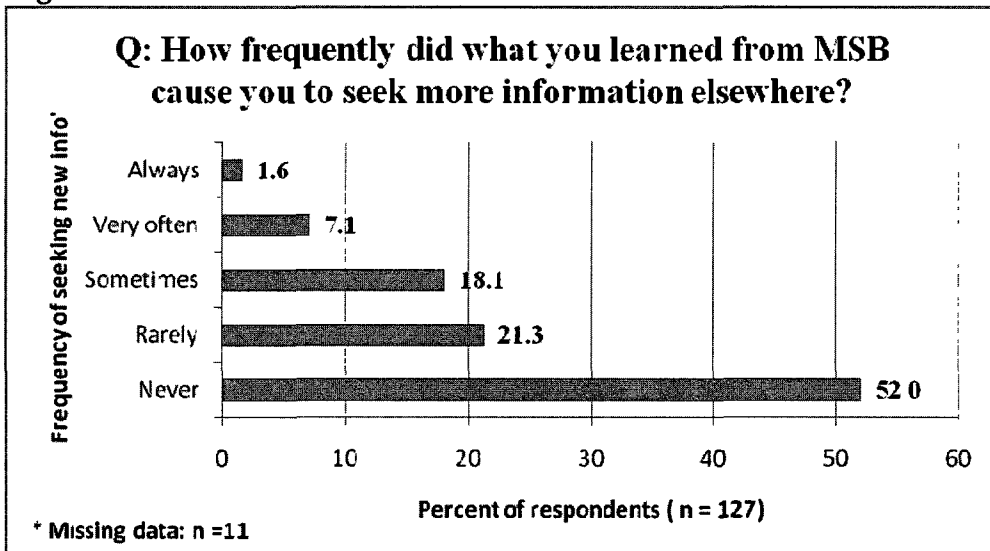


Figure 29

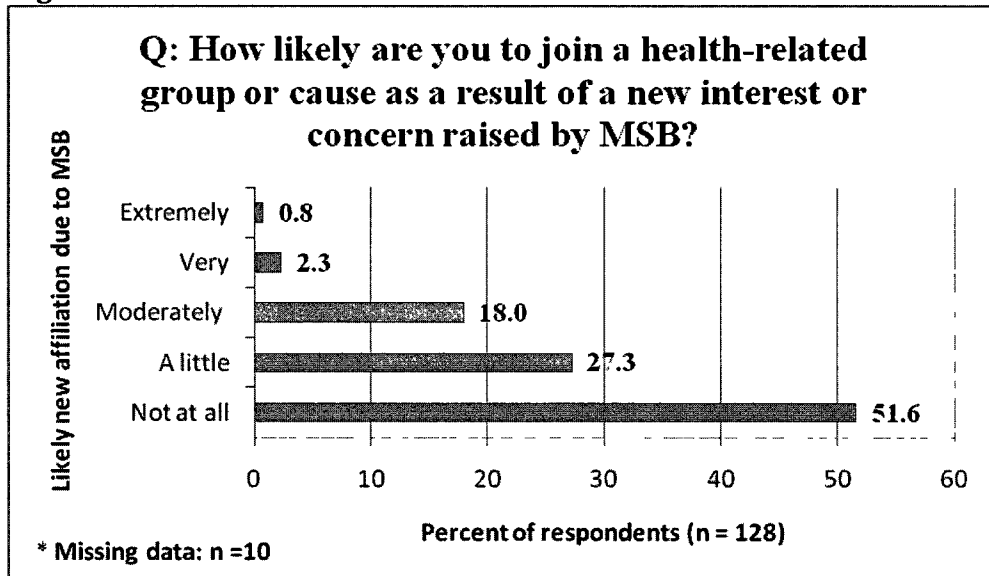
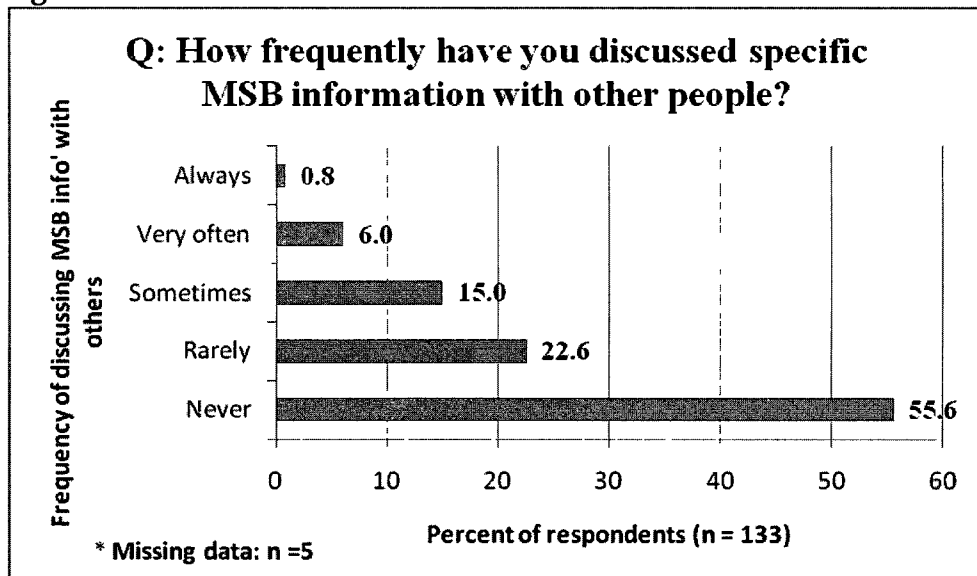


Figure 30

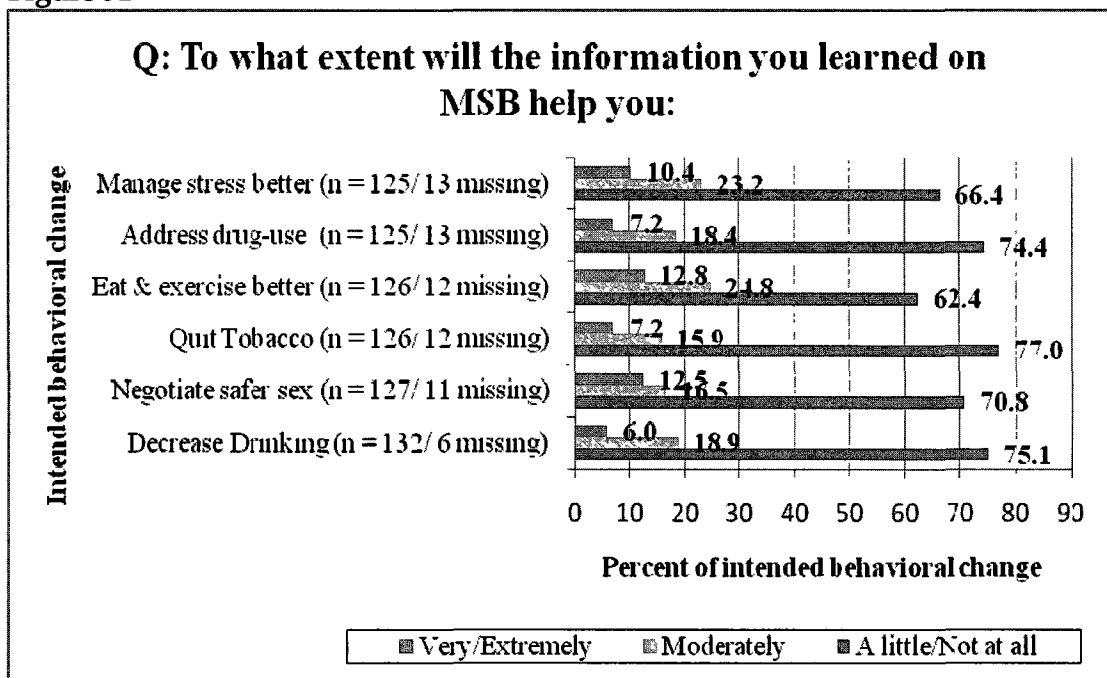


Intended Behavioral Change

Multiple survey items addressed intended behavioral change linked to participants' MSB engagement (i.e., intent to manage stress better; address drug use; eat and exercise better; quit tobacco; negotiate safer sex; and decrease drinking). Figure 31

shows data relating to all six MSB topic areas. The most striking finding is that for all MyStudentBody topic areas, a majority of respondents (62.4 – 77.0%) reported that what they learned from MSB would help them change their health-related behaviors. Participants reported the highest percentage of intended behavioral change in the category “eating and exercising better,” with 25% reporting that MSB would “moderately” help them eat and exercise better and 13% stating it would definitely (“very/extremely”) do so.

Figure 31

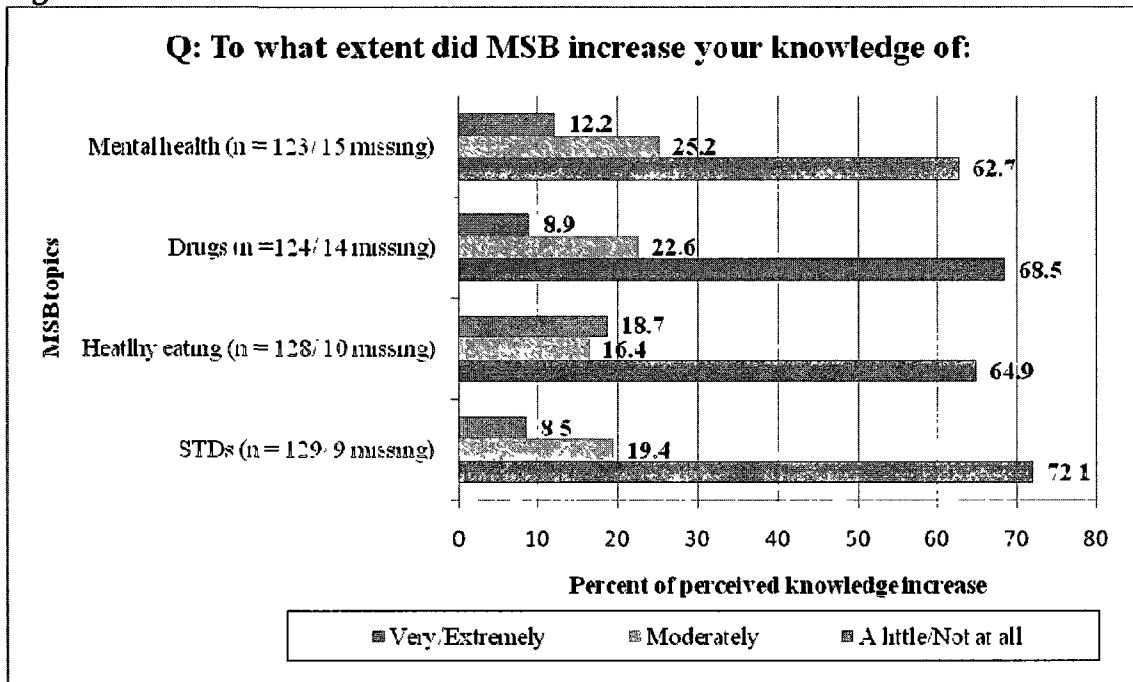


New Knowledge

Self-reported acquisition of new knowledge is another possible sign of website content engagement. Four post-survey items asked about new learning regarding the topics of mental health, illicit and prescription drugs, healthy eating habits, and sexually

transmitted disease. As shown in Figure 29, most participants reported little to no learning from their use of MSB.

Figure 32



Bivariate Analysis: Predictors of Key Outcomes

As explained in Chapter III, after eliminating variables that were significantly associated with each other, I chose to examine predictors of the following key outcome variables: “Did you complete the MSB-Alcohol course?” (Q3); “As you spent time on MSB, how often did you visit MSB-Alcohol?” (Q6); and “How relevant to your life is the health information on MSB?” (Q15).

Alcohol Course Completers versus Predictors

I found no statistically significant associations between the outcome variable, “Did you complete the MSB-Alcohol Course?” and the priority predictor variables.

Table 16 shows the predictor variables, the statistical tests used, and significance values.

Alcohol Module Visits Vs. Predictors

There was a nearly significant association between the frequency of visits to the alcohol module and “degree of conscientiousness,” as measured by the TIPI scale ($p = 0.054$). All other findings were not statistically significant. Table 17 shows the predictor variables, the statistical tests used, and significance values. A cross-tabulation shows that respondents with higher TIPI conscientiousness scores visited the MSB-Alcohol module less frequently (see Table 18). The Spearman’s Rho value of $-.168$ confirms a negative relationship between the TIPI conscientiousness score and the frequency of MSB-Alcohol visits; participants with higher conscientiousness scores tended to report never visiting MSB-Alcohol.

Table 16²

Comparative Analysis: Q3 and Priority Predictors		
Variable: Q3: Did you complete the MSB-Alcohol Course?		
Predictor Variables	Test Used	p-value
Gender	Fisher's Exact Test	0.276
Race	Fisher's Exact Test	0.322
Class Year	Pearson Chi-square	0.436
Family Income	Pearson Chi-square	0.740
Perceived Physical Health	Mann-Whitney U	0.209
Perceived Mental Health	Mann-Whitney U	0.530
Depression Score (HANDS)	Mann-Whitney U	0.484
Anxiety Score (C-D GAD Screen)	Fisher's Exact Test	0.999
Level of Internal Locus of Control	Fisher's Exact Test	0.722
Level of External Locus of Control	Fisher's Exact Test	0.850
Level of Self-Monitoring	Fisher's Exact Test	0.570
Ten-Item Personality Inventory		
Degree of Extroversion	Mann-Whitney U	0.064
Degree of Agreeableness	Mann-Whitney U	0.357
Degree of Conscientiousness	Mann-Whitney U	0.666
Degree of Emotional Stability	Mann-Whitney U	0.863
Degree of Openness to Experiences	Mann-Whitney U	0.842

² I selected the particular statistical test using the following rationales: I used only non-parametric tests because the data were at nominal or ordinal levels. When comparing two unpaired groups, I elected to use the Fisher's Exact Test rather than the chi-square test, considering the test's ability to detect significance with small sample sizes. I used Spearman's Rho when both variables were ordinal and I wanted to determine the degree and direction of their association. I chose to use Mann-Whitney U when comparing two groups (e.g., alcohol test completers vs. non-completers) and wanting to determine whether the median of one group was significantly greater than the median of another group. I used Kruskal-Wallis H when comparing more than two groups.

Table 17³

Comparative Analysis: Q6 and Priority Predictors		
Variable: Q6: As you spent time on MSB, how often did you visit MSB-Alcohol?		
Predictor	Test Used	P-value
Gender	Mann-Whitney U	0.118
Race	Mann-Whitney U	0.708
Class Year	Kruskal Wallis	0.305
Family Income	Kruskal Wallis	0.236
Perceived Physical Health	Spearman's Rho	0.251
Perceived Mental Health	Spearman's Rho	0.116
Depression Score (HANDS)	Spearman's Rho	0.211
Anxiety Score (C-D GAD Screen)	Mann-Whitney U	0.566
Level of Internal Locus of Control	Mann-Whitney U	0.728
Level of External Locus of Control	Mann-Whitney U	0.073
Level of Self-Monitoring	Mann-Whitney U	0.626
Ten-Item Personality Inventory		
Extroversion	Spearman's Rho	0.072
Agreeableness	Spearman's Rho	0.406
Conscientiousness	Spearman's Rho	0.054
Emotional Stability	Spearman's Rho	0.971
Openness to Experiences	Spearman's Rho	0.656

³ I selected the particular statistical test using the following rationales: I used only non-parametric tests because the data were at nominal or ordinal levels. When comparing two unpaired groups, I elected to use the Fisher's Exact Test rather than the chi-square test, considering the test's ability to detect significance with small sample sizes. I used Spearman's Rho when both variables were ordinal and I wanted to determine the degree and direction of their association. I chose to use Mann-Whitney U when comparing two groups (e.g., alcohol test completers vs. non-completers) and wanting to determine whether the median of one group was significantly greater than the median of another group. I used Kruskal-Wallis H when comparing more than two groups.

Table 18

Cross-tabulation of TIPI Conscientious Score & Reported Frequency of Visiting MSB-Alcohol (n, %)								
	TIPI Conscientiousness Score (1 = low, 7 = high)							
How often did you visit MSB-Alcohol?	5.5		6.0		6.5		7.0	
	n	%	n	%	n	%	n	%
Never	10	40.0	14	58.3	8	50.0	10	52.6
Rarely	3	12.0	6	25.0	1	6.3	5	26.3
Occasionally	6	24.0	2	8.3	4	25.0	4	21.1
Frequently	6	24.0	2	8.3	3	18.7	0	0.0
Total	25	100	24	100	16	100	19	100

MSB Relevance vs. Predictors

Three predictor variables were statistically associated with the perceived relevance of MyStudentBody topics and content: perceived mental health ($p=.002$), plus “agreeableness” ($p=.021$) and “openness to experiences” ($p=.047$) from the Ten-Point Personality Inventory Scale (TIPI). Table 19 shows the predictor variables, the statistical tests used, and significance values.

Regarding perceived mental health, the cross-tabulation data in Table 20 shows more students with “very good” or “excellent” perceived mental health finding MSB to be “not at all” to “moderately” relevant. The Spearman’s Rho correlation coefficient was .271, indicating a positive correlation. Concerning the TIPI variable

Table 19⁴

Comparative Analysis: Q15 and Priority Predictors		
Variable: Q15: How relevant to your life is the health information on MSB?		
Predictor	Test Used	P-value
Gender	Mann-Whitney U	0.464
Race	Mann-Whitney U	0.112
Class Year	Spearman's Rho	0.082
Family Income	Kruskal-Wallis	0.125
Perceived Physical Health	Spearman's Rho	0.512
Perceived Mental Health	Spearman's Rho	0.002
Depression Score (HANDS)	Spearman's Rho	0.574
Anxiety Score (C-D GAD Screen)	Mann-Whitney U	0.634
Level of Internal Locus of Control	Mann-Whitney U	0.412
Level of External Locus of Control	Mann-Whitney U	0.322
Level of Self-Monitoring	Mann-Whitney U	0.092
Ten-Item Personality Inventory		
Extroversion	Spearman's Rho	0.731
Agreeableness	Spearman's Rho	0.021
Conscientiousness	Spearman's Rho	0.335
Emotional Stability	Spearman's Rho	0.13
Openness to Experiences	Spearman's Rho	0.047

of “degree of agreeability” and perceived MSB relevance, data listed in Table 21 reveal a tendency for ratings of MSB content relevance to go up as agreeability scores rise. Lastly,

⁴ I selected the particular statistical test using the following rationales: I used only non-parametric tests because the data were at nominal or ordinal levels. When comparing two unpaired groups, I elected to use the Fisher’s Exact Test rather than the chi-square test, considering the test’s ability to detect significance with small sample sizes. I used Spearman's Rho when both variables were ordinal and I wanted to determine the degree and direction of their association. I chose to use Mann-Whitney U when comparing two groups (e.g., alcohol test completers vs. non-completers) and wanting to determine whether the median of one group was significantly greater than the median of another group. I used Kruskal-Wallis H when comparing more than two groups.

the cross-tabulation data in Table 22 show that, generally, as participants' TIPI "openness to experiences" score go down, reported ratings of MSB relevance go down. The Spearman's Rho correlation value of .176 indicates a weak positive relationship.

Table 20

Cross-tabulation of Response Variables: Perceived Mental Health & Perceived MSB Content Relevance (n, %)										
"How would you describe your overall mental health?"	"How relevant to your life is the information in MSB?"									
	Not at all		A little		Moderately		Very		Extremely	
	n	%	n	%	n	%	n	%	n	%
Excellent	4	23.5	8	30.0	9	16.4	0	0.0	0	0.0
Very Good	11	64.7	10	37.0	19	34.5	8	36.3	4	80.0
Good	1	5.9	4	14.8	17	31.0	10	45.5	0	0.0
Fair/Poor	1	5.9	5	18.5	10	18.1	4	18.2	1	20.0
Total	17	100	27	100	55	100	22	100	5	100

Multivariate Analysis

Despite the lack of evidence of significant associations between predictor and outcome variables, I performed a series of logistic regressions in an additional attempt to find significant associations and test for interactive affects. For example, after adjusting for gender, being a junior was not a significant predictor of not completing the MSB-Alcohol course, a possible website engagement indicator. None of the tested models showed any significant associations.

Table 21

Cross-tabulation of Response Variables: TIPI Agreeableness Score & Perceived MSB Content Relevance (n, %)														
	TIPI Variable Score on Agreeableness (1=low, 7=high)													
"How relevant to your life is the information in MSB?"	2.5		3.5		4.0		4.5		5.0		5.5		6.0	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Not at all	0	0.0	0	0.0	1	9.1	1	4.5	5	33.3	5	21.7	4	16
A little	0	0.0	1	100.0	6	54.5	3	13.6	3	20	7	30.4	3	12
Moderately	1	100.0	0	0.0	3	27.3	14	63.6	5	33.3	8	34.8	13	52
Very	0	0.0	0	0.0	1	9.1	2	9.1	2	13.3	2	8.8	4	16
Extremely	0	0.0	0	0.0	0	0.0	2	9.1	0	0.0	1	4.3	1	4
Total	1	100	1	100	11	100	22	100	15	100	23	100	25	100

Website Activity Logs

I designed the MyStudentBody Activity Logs to test the hypothesis that log use would bolster website engagement. I also employed them to gather additional information on content selection, time spent on the site, and perceptions of the module activities and content. Unfortunately, only one participant of the 35 asked to use activity logs during their MSB use complied with the instructions, despite weekly email prompts throughout the nine-week site access period. Many students never returned their logs. Several students returned their logs with the mailing envelope unopened. I will discuss possible reasons for this study component failure in Chapter V.

Table 22

Cross-tabulation of Response Variables: TIPI Openness to Experiences Score & Perceived MSB Content Relevance														
TIPI Variable Score on Openness to Experiences (1=low, 7=high)														
"How relevant to your life is the information in MSB?"	2.5		3.0		3.5		4.0		4.5		5.0		5.5	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Not at all	0	0.0	0	0.0	0	0.0	1	9.0	3	25	1	6.3	3	12.5
A little	0	0.0	1	100.0	2	66.7	5	45.5	1	8.3	4	25	7	29.2
Moderately	1	100.0	0	0.0	1	33.3	5	45.5	5	41.7	8	50	12	50
Very	0	0.0	0	0.0	0	0.0	0	0.0	3	25	3	18.7	2	8.3
Extremely	1	100	1	100	3	100	11	100	12	100	16	100	24	100

Qualitative Measures

Focus Group Summary

Following the post-study surveys, I convened four focus groups to learn about students' ideas, beliefs, and experiences regarding health education website use (e-Health) in general and MyStudentBody (MSB) in particular. I recruited a convenience sample of focus group participants via an email invitation to all Wheaton students. There were two groups with students who had participated in all College Health Information Study (CHIS) activities and two groups with students who reported no substantive experience with MSB or other e-Health programs (XCHIS).

Facilitators directed group discussions that focused on student perceptions

regarding the validity of health education websites (e-Health) as a campus resource and health promotion tool; possible barriers to accessing such programs; alternative options to e-Health education; patterns of MSB use (CHIS) and predicted use (XCHIS); positive and negative characteristics of MSB; beliefs regarding whether and how MSB and similar sites might influence undergraduate health behaviors; ideas for promoting e-Health education programs on campus; and recommendations for improving MSB and related websites. Analysis of the focus group data focused on identifying and interpreting common and contrasting themes that emerged among and between the four groups.

Focus Group Profiles

The focus groups census ranged from a high of ten (Group C) to a low of four (Group A) participants due to late cancelations and no-shows. Groups A and B participated in the core study components (CHIS: pre- and post-surveys and nine-week MSB-use). Group A had four students: all white, non-Hispanic females; one freshman, two sophomores, and one senior. Group B had seven participants: two males and four females; all white, non-Hispanic; two freshmen, one sophomore, one junior, and three seniors. Groups C and D did not participate in the core study components (XCHIS). Group C, the largest and most diverse of the groups, had ten students: five males and five females; two white, non-Hispanic, four black, and three self-identified bi- or multiracial; one international student; two freshmen, three sophomores, three juniors, and two seniors. Group D was comprised of six students: two males and four females;

three white, non-Hispanic, one black, one Hispanic, and one self-identified as “Other”; three freshmen, two sophomores, and one junior. Table 23 shows the demographic profile for each set of focus group participants. In general, Groups A and B (MSB-Experienced) had a higher percentage of female and white, non-Hispanic participants than Groups C and D (MSB-Inexperienced).

Tree Nodes

Focus group questions prompted student comments that were comparatively similar within and across groups. I organized these comments into common hierarchical “containers” called “Tree Nodes” in the qualitative analysis program NVivo. These Tree Nodes, plus the “Parent” Nodes and “Child Nodes” within them, helped me identify and characterize the prominent student ideas and beliefs regarding MyStudentBody and their actual or predicted use of this and similar college e-Health programs. This system also helped uncover important themes that I will discuss later. The following is a summary of the focus groups’ comments, organized by category.

Perceived Validity of the e-Health Education Modality

When asked about “websites as a way to offer health information to college students,” comments by both MSB-experienced (CHIS) and non-experienced (XCHIS) students focused on the benefits of convenience and confidentiality. Convenience was the most frequently mentioned attribute making e-Health programs a good health promotion method. The CHIS groups made a total of eleven references to convenience, and the XCHIS groups made four such references. The following comment from a Focus

Group A participant is illustrative: "...for me, a website's the best way to get the information because it's just where I'm going to be." A Focus Group D participant's comment regarding "confidentiality" is representative of other students' sentiments: "A lot of us are busy, so we don't wanna, you know, go to the doctor's and ask a question and sometimes, if something's like private that you don't wanna talk to, you don't need to talk to anyone, you can just Google it or something and find out." Other positive comments regarding the general merits of college health web-products included issues relating to reliability, autonomy, and inexpensiveness.

The majority of negative comments regarding student perceptions of web-based health information programs centered on preference for a human resource (7 comments), questions about website credibility or reliability (7 comments), and the belief that "it's not students' way," meaning that students generally do not use websites as a meaningful health resource (4 comments). Figure 33 presents diagrams of focus group comments regarding perceptions of the e-Health modality.

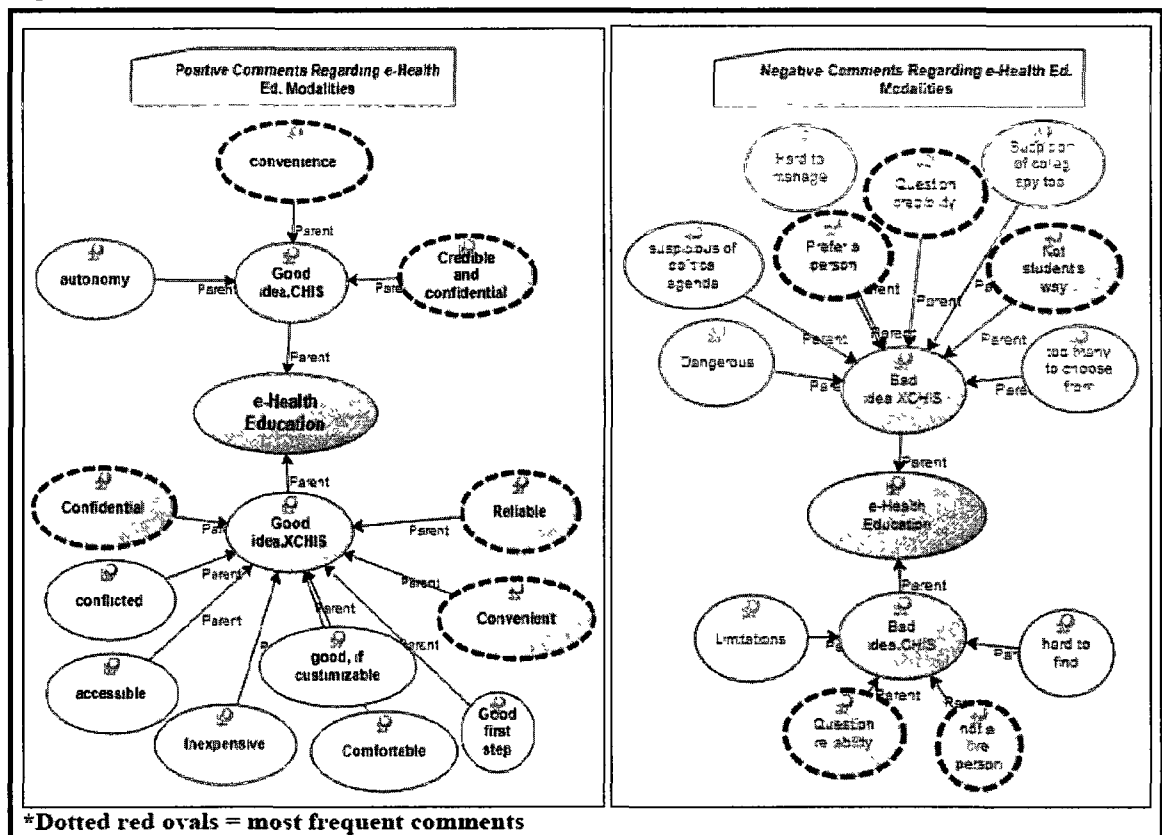
Table 23

Focus Group Participant Profiles						
Demographics	MSB-Experienced Group (CHIS)			MSB-Inexperienced Group (XCHIS)		
	A	B	% Total	C	D	% Total
Gender			n = 11			n = 16
Female	4	4	72.7	5	4	56.2
Male	0	2	18.2	5	2	43.8
Abstained	0	1	9.1	0	0	0.0
Race/Ethnicity			n = 12			n = 13
White, non-Hispanic	4	7	91.7	2	3	23.1
Black	0	0	0.0	4	1	38.5
Hispanic	0	0	0.0	0	1	7.7
Asian/Pacific Islander	0	0	0.0	0	0	0.0
American Indian/ Native Alaskan/ Native Hawaiian	0	0	0.0	0	0	0.0
Biracial/Multiracial	0	0	0.0	3	0	23.1
Other	1	0	8.3	1	0	7.7
Age			n = 11			n = 16
18	0	1	9.1	2	2	25.0
19	1	2	27.3	1	3	25.0
20	2	1	27.3	3	1	25.0
21	1	1	18.2	2	0	12.5
22	0	2	18.2	2	0	12.5
Class Year			n = 11			n = 16
1st	1	2	27.3	2	3	31.2
2nd	2	1	27.3	3	2	31.2
3rd	0	1	9.1	3	1	25.0
4th	1	3	36.4	2	0	12.5
International Status			n = 11			n = 16
Yes	0	0	0.0	1	0	6.3
No	4	7	100.0	9	6	93.7
Housing Status			n = 11			n = 16
Resident Hall	4	6	90.9	6	6	75.0
Theme House	0	1	9.1	4	0	25.0

Perceived Barriers to College Web-Based Health Programs

Throughout the sessions, as focus group participants shared their positive and negative opinions regarding college health web programs and their experiences with MyStudentBody, they identified several perceived barriers to using web-based health programs. The barriers students mentioned were diverse, and no prominent patterns emerged. Most of the comments came from the MSB-experienced focus groups

Figure 33



(groups A and B). Still, I believe the list is useful in understanding why some students fail to access e-Health programs and MSB, in particular. Program developers and college

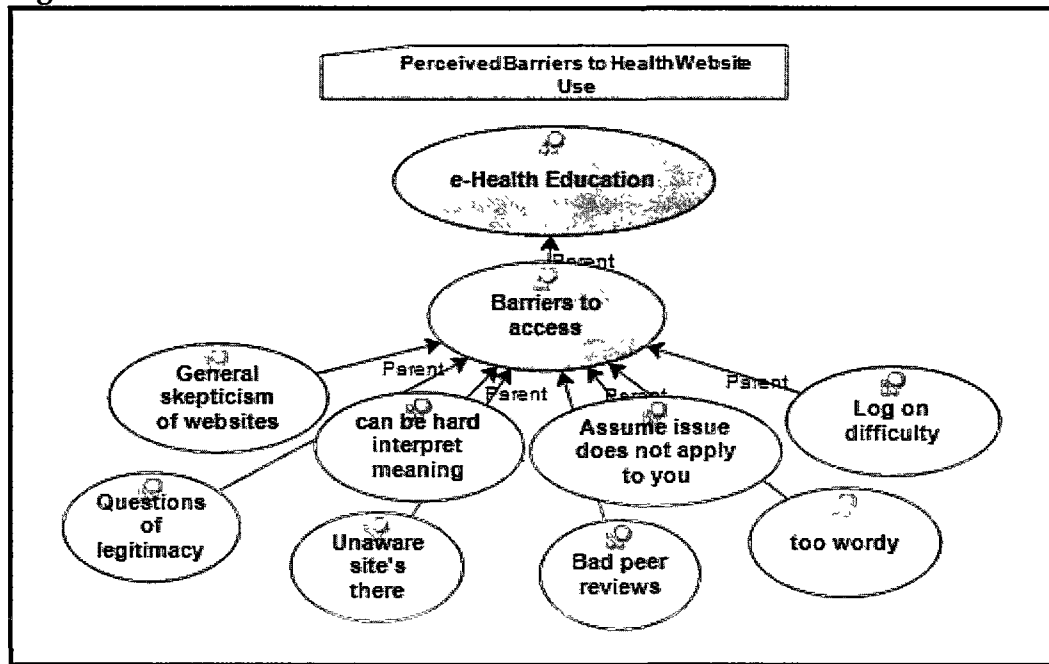
administrators may also find this list instructive for improving future program access and engagement.

Figure 34 presents focus group respondents' perceived barriers to health website access and use, including exposure to bad program reviews from campus friends; web-pages that are "too wordy"/text-dense; complicated log-on processes; general skepticism and limited trust in web content; and simply being unaware that the program is available. When listening to the audio recordings and reading the transcripts, I noted signs of broad agreement (i.e., affirmative sounds and comments) when individuals presented many of these ideas, suggesting that these comments reflected common experiences or shared opinions among the focus group members.

Alternatives to e-Health Programs

Both the CHIS and XCHIS groups offered a broad variety of alternatives to web-based college health programs. Most ideas centered on specific trusted individuals such as doctors, nurses, parents, peers, and teachers. Other ideas focused on creating structured group health learning opportunities through existing classes, residence hall meetings, or topic-specific events or workshops.

Figure 34



General Impressions of MyStudentBody (MSB)

Without a prompting question, Focus Group B (CHIS participants/MSB-Experienced) offered both positive and negative opinions about their study-related experiences with MSB that merit attention. Three affirmative comments addressed positive perceptions of the site's reliability and the non-judgmental and private atmosphere the website created. Participants said:

- "I liked it a lot."
- "Well, it seemed like it knew what it was talking about, and there were so many different resources and links and that helped to legitimize it."
- "...But I think the anonymity of it is good, because even, I think, I mean most people don't really want to talk about any of these things, and even, you know, as like a freshman, if I had a question about alcohol, it's like, Oh, if I ask one of my friends they'll be like, Oh, how do you not know that? Like, aren't you hard

core enough for you to party and, shut up, like I don't know, but like it's just nice to know that I can go somewhere and read about it and not feel judged."

This group's negative critique of MSB covered a broad and diverse set of issues. One student questioned the reliability of particular articles about methamphetamines and the use of hookahs versus cigarettes. Several students voiced concern that some content felt "preachy" (excessively moralistic), with one saying:

"I thought it was sort of like Public Safety or my parents, like, telling you what not to do instead of, like, letting you figure it out on your own and just making sure that you're safe. It's restricting you."

Two students commented that, while they liked a lot about the site, it seemed more geared toward freshmen and sophomores. One student stated:

"I feel like and partially that might just be because some of us are seniors and we feel like we're at the end of the college. Like I tried when I was looking at, to be like, OK, for freshmen was this, but, like, a lot of the stuff, like by senior year, I felt like a lot of the information I was deciding whether I agreed with it or didn't really agree with it more than, did I know this because by then we kind of already have our own opinions and stuff and they're not gonna really change it."

Study Participants MSB-Use

Visit Frequency and Session Duration

The facilitator asked Focus Group A and B members to describe how they used MSB as a study participant and to detail how often they logged in and approximately what part of the day or night they visited MSB. The majority reported frequent visits to MSB and longer web sessions in the first several weeks of the nine-week study period, but said that the number and length of visits dropped off significantly after the third or fourth week. Regarding the time of day they visited MSB, students seemed evenly split

between visiting during the day after class, early evening after dinner, and late night/early morning. Several reported frequently logging on soon after receiving the weekly study email reminders.

What Caught Your Eye?

The facilitator also asked students to describe what had prompted them to stop at certain MSB material. Of the 22 comments regarding eye-catching content, nearly 60% related to interactive tools and activities such as quizzes, the blood alcohol content (BAC) calculator, and humorous videos. Other comments cited attractive graphics and provocative headlines.

What Turned You Off?

A follow-up question asked the participants what had prompted them to leave certain MSB material. In response, students focused mostly on the length of the text and perceived bias in the content. Several students commented that parts of the site were text-heavy and that some articles and stories were too long. Regarding perceived bias, one student said:

“When it said something that you knew was wrong or just, like, really opinionated instead of sticking to something that was factual, that really drove me away.”

Site Navigation Strategies

Another part of the MSB discussion focused on navigation strategies students used when visiting MSB. Of the eight comments collected, three detailed the use of the module quiz feedback to guide users to personally interesting and relevant information.

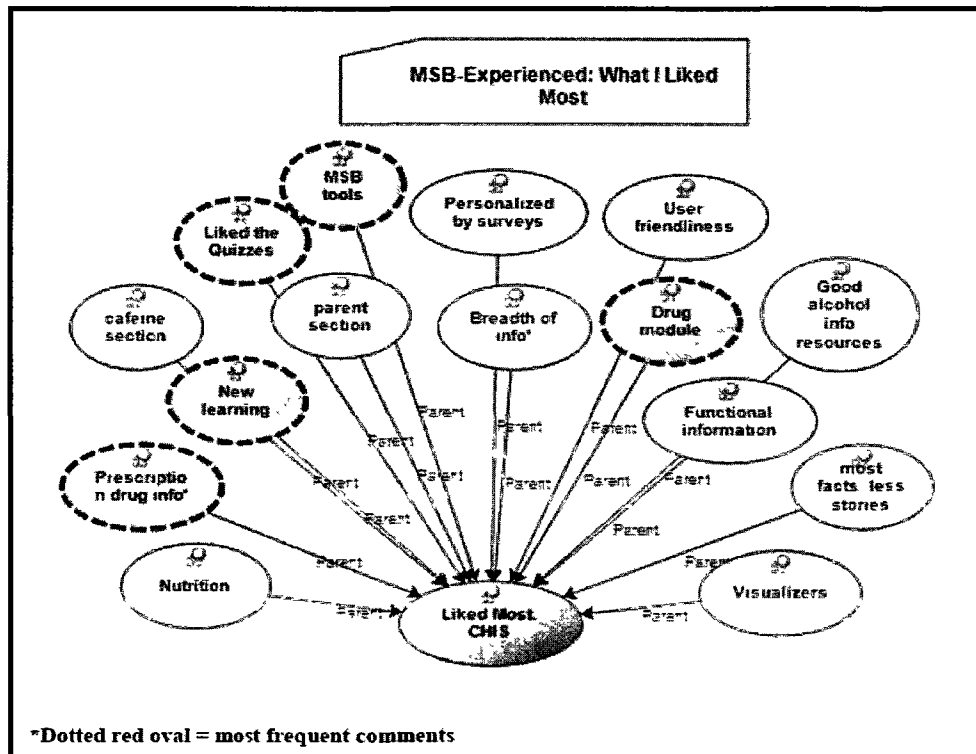
The remaining described a combination of general informal browsing and directed searching. One student described a blend of surfing and searching:

“I liked being able to click through certain things, like, just if, again it was the stuff that was directly relevant to the article that you had just read, so, if I wanted to learn more about it, I could, and if I didn't want to I could just scroll up and do that.”

What Did You Like Most?

The study participants in Focus Groups A and B were next asked what they liked most on MSB and why. As noted in Figure 32, of the 31 “liked most” comments, MSB quizzes and tools (interactive audio-visual features designed to give customized feedback and general information on health behaviors) elicited the most comments (8 and 5, respectively), followed by the MSB-Drug module and “new learning” (the experience of finding unexpected and new information), each with 4 comments. Figure 35 includes all of the comments regarding the most liked site features and characteristics.

Figure 35



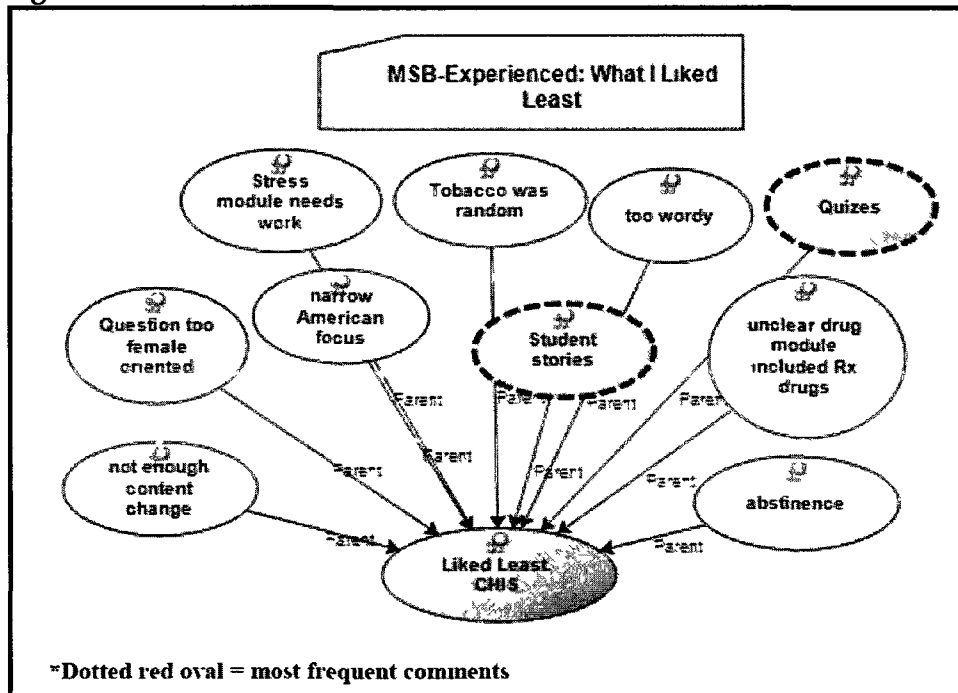
What Did You Like Least?

Facilitators also asked members of Focus Groups A and B what MyStudentBody features and characteristics they liked least. Students' responses were more disperse, and some contradicted comments made by other students about what they liked most. Of the 19 comments, five referred to the student stories as being least liked. Contrary to what other group members said, three students found the quizzes to be among the least attractive features.

Two comments identified the "narrow American focus" as objectionable and expressed an interest in more global, multicultural perspectives being included in the site environment. Two other comments argued that the MSB-Drug module needs to

better highlight its interesting prescription drug content, which seemed lost in MSB's emphasis on illicit drugs. Figure 36 includes all student comments addressing their least liked MSB features.

Figure 36



Comparison Comments from MSB-Inexperienced Students

Members of Focus Groups C and D, who reported having no experience with MyStudentBody, answered similar questions related to their use of the internet to address their health-specific concerns. These students' responses shared some similarities with what their MSB-Experienced counterparts had stated.

For instance, when asked what caught their attention and caused them to stop at certain health websites, the most frequent responses included: "good graphics," personal relevance, and clear, concise content and site organization. The MSB-

Experienced group said the absence of these attributes on certain MSB pages prompted them to disengage from content material. Attributes that prompted MSB-Inexperienced students to leave e-Health pages included overt sale pitches, biased information, poor site design, and overly complicated text.

Can MSB-like Websites Influence Students' Health Behaviors?

The facilitator asked all focus group members whether they thought MSB and web programs like it could influence undergraduates' health behaviors. Prominent comments from MSB-Experienced students (Focus Groups A and B) who believed that these sites have an influence were clustered into the following categories (Parent Nodes): "filtering through peers" (i.e., peer influence through transmission and promotion of MSB content), "personal control and choice" (i.e., pressure-free, self-determined choice and actions), "prevention" (content inspired healthier choices), and "by getting the information out there" (i.e., widely sharing MSB content with community members). Regarding transmitting health information through peers, one student said:

"I think, for me, when I went on the website, when I found a lot more information, I went back to my friends because I know that a lot of my friends are having problems with poor nutrition or stress and it was a way for me, for, I used it as a way for them to feel like, you don't have to go to an older person and be judged by them. You can go to this website and not feel like, oh my gosh, they're gonna judge me because I drink, it's just a way for you to feel comfortable even if it's like in your own room or when I'm like talking to them because it's better to, I think it's better for other, I know we're not, like, therapists, but it's better for others, for your friends to talk to you about the situation that you're in instead of not all the time having to go to some higher official because you don't feel like your problems are being heard."

Prominent comments from MSB-Inexperienced students (Focus Groups C and D) who believe e-Health programs like MSB could influence students included the following categories: “by using student voices,” “through campus saturation,” “at early stages before habits settle,” and “skills training.” Regarding e-Health skill development, one student commented:

“I mean, if they had referred back like, oh yeah, I read that thing about alcohol, like blue is a really bad sign. Whether or not I'm going to get in trouble, I'm going to save my friend's life today or whatever and make that choice to call 9-1-1. Like, I think if the information's out there and students are able to learn it through this site, that their behavior might change, at least in that example.”

There were also students who did not believe e-Health websites like MSB can influence student health behaviors. MSB-Inexperienced students (Focus Groups C and D) offered nearly all of the skeptical comments, the majority of which were placed in the category “hard to change habits.” Regarding the believed difficulty in changing habits, one student commented:

“It's like the expression, ‘You can't train an old dog new tricks.’ I feel like, at this point, more college students have learned what they need to know and decided who they are and what they, like what is going to influence them in their lives. And at that point if you teach something that they're totally against it's just not gonna, you know they're just not gonna care.”

Are e-Health Websites More Likely to Influence Certain Behaviors?

Next, students commented on whether they believed MSB and similar web programs are apt to influence certain health behaviors more than others. The majority of comments from all groups centered on the idea that less stigmatizing health issues, such as stress and nutrition, are more susceptible to influence compared to issues such as sex,

drugs, and alcohol. The following two comments are representative:

- “I feel like it would influence people with nutrition and stress because people, cuz' there's no like, social repercussions or connotations along with that, like, that's just really, like, no one's gonna, like, you're not gonna worry about what people are gonna think if, like, you have a change in nutrition whereas alcohol, yeah, and drugs and sexual health, that gets into a lot of, like, he said/she said parties, what did you do, what you don't do. So people would probably be slower to make any changes in that, in those areas.
- “Yeah, Elizabeth basically said what I wanna say, like, that those, like, specifically because they're very less peer, you know peer pressure, to use a middle school term. But really, the stress and nutrition, those are really just about you, whereas the other ones are sort of like they're less personal, like, they're still personal choice, but way more influenced by other people than, you know, just your stress and your nutrition.”

A cluster of comments on this topic from the MSB-Inexperienced focus groups (6 of 17 related comments) centered on the belief that freshman are most at risk and also more likely to be influenced after engaging in health education websites like MyStudentBody. For example, one student said:

“And so I think if a site like this would be trying to influence someone, it should be presented to them right at the beginning of college, because that's when, like freshman year because that's when people are thinking, I'm away from home, I can try all this new stuff and I don't have to.”

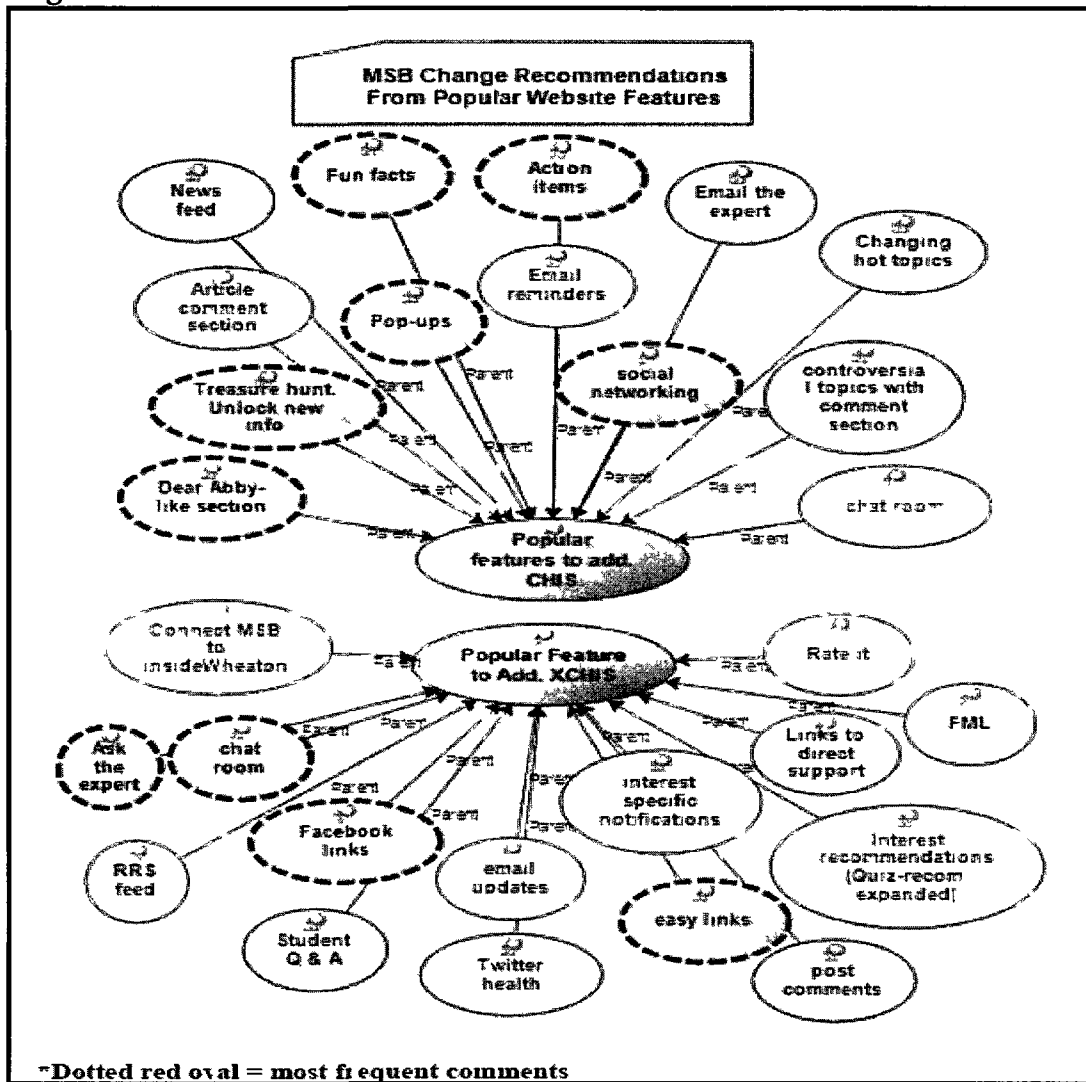
How Would You Improve MSB and Other e-Health Programs?

Lastly, the facilitator asked students how they would improve MyStudentBody and to name the ideal features and elements that would be part of their ideal college health website. The focus group participants spoke at length on this topic, offering over 100 various ideas and comments. Most of the ideas centered on features from their favorite websites that they believed would make MSB and similar programs more

attractive and engaging to undergraduates.

Figure 37 below provides the categorical features lists from both the MSB-Experienced (CHIS) and MSB-Inexperienced (XCHIS) groups. The most frequently mentioned web-features included: site pop-ups that highlight fun facts or point to interesting site content; chat rooms and other social networking-like features, including the ability to email friends interesting content and the option to rate content; RSS (really simple syndication) feeds that present users with updated site content selected from their individualized interest menu; direct links to Facebook and Twitter; a money management section; and expanded “Ask the Expert” features that include occasional live online chats.

Figure 37



Students also discussed ideal e-Health program attributes that they believed could encourage more students to use MSB and similar programs. The most popular examples included: concise text; using simple, clear language that utilizes scan-friendly bulleted formats; simple log-on access, including the use of campus web portals such as “insideWheaton” (Wheaton’s online web portal that channels access to most Wheaton-related resources and news information); the use of neutral content frames that avoid

moral or political bias (i.e., avoid “preachiness”); increased citations of information sources; summarized content that provides easy links for “drilling down” to more details; and frequently updated content material.

The following discussion demonstrated students’ belief that refreshing website content material could lead to an increase in student visits:

Ella: “...it's the same information on it as when you began, right?”

Bambi: “Um-hmm.”

Marge: “Um-hmm.”

Bambi: “So, maybe that people would want to stay, maybe not even on it longer, but they'd be on it more frequently.”

Ella: “Yeah, cuz' they'd go on to see what's new.”

These comments may help explain the reduction of study participants’ MSB use over the nine-week viewing period. The study participants were asked to spend 90 minutes per week on the MSB site, but with no new information being introduced, they may have quickly run out of content to engage in. Indeed, it is possible that some students covered most or all of the website offerings that interested them in just one or two visits.

Free Nodes

NVivo describes Free Nodes as “stand-alone nodes (‘categorical containers’)...that do not easily fit into a hierarchical structure.” I created several Free Nodes for focus group comments that provide useful data for qualitative analysis. Below

is a summary of two prominent categories of student comments.

Resident Advisors

Resident Advisors (RAs) are students trained to serve as resources to students living in the residence halls, helping the adult professional residence staff (Area Coordinators) establish and promote residential safety and quality on-campus living. Typically, one RA lives on each residence hall floor. Wheaton Resident Advisors traditionally communicate health and safety messages information about college policies and procedures, and upcoming events via floor meeting, emails, bulletin boards, and wall flyers.

During the Focus Group C discussion on the impromptu topic of promoting MSB to students, the subject of the RA's role as a resource for health information arose, prompting seven individual comments. Several of these comments addressed the hope that RAs would get training in MSB features and content so that they could point others to the site and promote MSB content in hall meetings and on bulletin boards.

Other comments addressed the potential for RAs to be students' easy personal link to the health information they need through more effective floor meetings, highlighting students' preference for peer-to-peer support. One student commented on how RA endorsements of MSB-like information would help students access the information more readily:

"I think a more informed RA would be a more respected RA, so if you do have the actual, factual information and they're actually telling you what's out there,

and you see it in front of you and they give you certain things, that you'll be more apt to think about it and actually take it seriously..."

Another student commented on the benefit of Resident Advisors developing experienced teacher/health advocate roles that could counter-balance their perceived policing role:

"I think students often forget what RAs are actually there for. I think they forget that they're there to help them and some often get it in their head that the RAs are like police and they're trying to get them in trouble. So, I think it's important that RAs show that they know things other than how to catch you with alcohol."

Study Limitation: 90-Minute Minimum

Another Free Node, coded as "Study Limitation," captured students' comments regarding the challenges they experienced with the 90-minute per week study instruction. While discussing their MSB utilization patterns, students made 7 individual comments regarding the study's requirement that participants spend 90 minutes per week on MSB during the nine-week exposure period. Everyone voiced agreement that the mandate was too long and burdensome. Two students summed up the general sentiment well:

- "Yeah, I'd say at the beginning the ninety minute, like cut-off thing was a bit long. It seemed a bit daunting because you'd be like, I have all this other homework and this is requesting ninety minutes of my time, so maybe like, I feel like if you had more students with fewer time you'd have a better turnout and better results."
- Yeah, I think an hour would have been fine because after an hour, I mean you have to assume that when a student sits down, like, they're only gonna think to do it once a week, pretty much, unless they have a specific question and they wanna jump on. Like most kids, if you can get them on at all that week, that's

pretty good, so, like, after an hour you kind of stop absorbing things, I feel like, so.”

Emergent Themes

After assessing the comments that had been aggregated in different Tree and Free Node categories, I analyzed the qualitative data from a broader view in search of emergent themes that could contribute to a better understanding of student web health information engagement. The following is a summary of the salient themes that emerged.

The Language of Engagement

In hearing and reading students’ focus group comments, I could detect an engagement theme emerge through a *language of engagement* – that is, words and phrases that highlighted experiences of content use or emphasized what did or could get students involved in the MyStudentBody content.

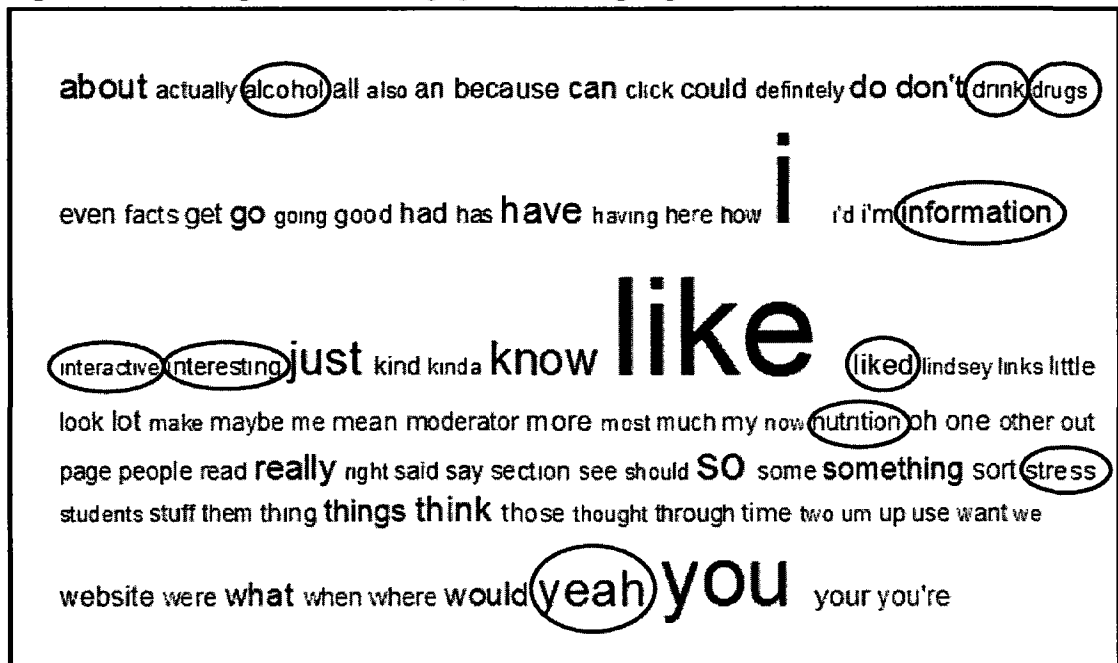
NVivo allows for “word frequency queries.” This helped me find the most frequently occurring words in Tree Nodes (large comment categories) that I considered engagement-specific. Tree Nodes included in the query include all nodes with positive MSB and e-Health comments (Good idea.CHIS, Good idea.XCHIS, MSB Good.CHIS), comments detailing active site use (MSB Use CHIS, Stop at Content CHIS and XCHIS), and comments indicating features they liked more or would most recommend (Liked Most.CHIS, First Impressions XCHIS, Change Recommendations, Ideal Health Web Features). I set the query to show the top 100 most frequent words in these nodes.

Figure 38 displays what NVivo calls a “Tag Cloud,” a visual representation of the query results showing different word frequencies.²⁵² An individual word’s font size and level of boldness correspond to its relative frequency. Within the program, a user can click on any word in the Tag Cloud to access all of the comment references and review the context of that word’s usage. For example, in Figure 38, the word “like” is the biggest, boldest word because it was the most frequent word found in the query results. Unfortunately, word frequency does not necessarily signal a meaningful data point, in this case, regarding the language of engagement. In reviewing the transcripts, I quickly discovered that the use of “like” in these students’ comments simply reflects this word’s over-representation in Wheaton students’ campus vernacular (e.g., “It’d be kinda fun to have, like, ‘hot topic of the month,’ like, violence against women, like, you know?”). Words circled in Figure 38 indicate the words that do correspond to engagement language.

In scanning the Tag Cloud in Figure 38, the words “alcohol,” “drink,” “drug,” “nutrition,” and “stress” relate largely to student comments regarding the attention they paid to these topics in MSB modules. The word “information” points to the frequent mention of students’ preference for factual information rather than what they perceived as opinion. “Interactive” most often referred to students’ most popular website content attribute. “Interesting” pointed to the common attraction to material that addressed students’ immediate needs and interests. “Liked” represents the common affirmation of a broad spectrum of MSB content. And the word “yeah” was a sign of agreement and

group consensus on the part of other participants in response to one student's comment.

Figure 38 Tag Cloud of Engagement Language



There is an emergent theme of college e-Health engagement in this *language of engagement*. I summarize this emergent theme using the words in the Figure 38 Tag Cloud: A subgroup of students said they did or would engage in MSB-like materials that are interesting in relation to their immediate needs and personal perspectives. These students are particularly attracted to MSB and e-Health content that is interactive and action-oriented and involves the topics of alcohol, drugs, nutrition, and stress. Study students who significantly engaged in MyStudentBody found consensus in what they liked about MSB and in the appealing concept of delivering college health information to undergraduates through web-based programming.

The Language of Non-Engagement

The *language of non-engagement* is more difficult to decipher than that of engagement. On its face, the Tag Cloud in Figure 39 appears to offer few clues regarding why study participants did not engage fully in MyStudentBody or why MSB-Inexperienced students predicted that they or their peers would not use MSB-like programs. But a review of the comments behind the word frequency icons did reveal some useful insights.

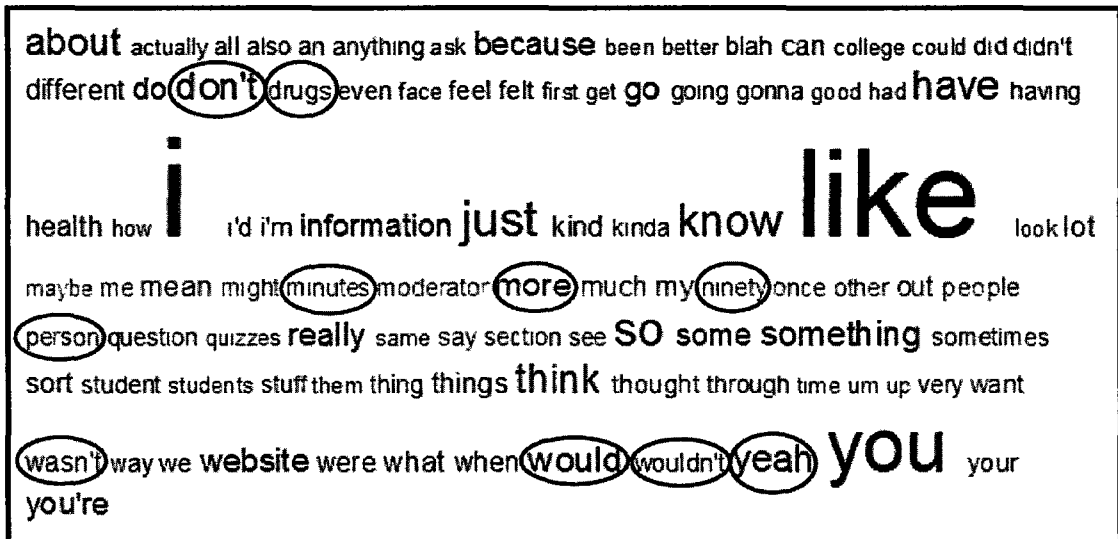
The Tree and Free Nodes used in the word frequency query include all negative comments related to MSB or e-Health programs (i.e., Bad idea.CHIS, Bad idea.XCHIS, MSB Bad.CHIS), comments describing alternatives to e-Health (i.e., alternative to e-Health.CHIS and XCHIS), perceived barriers to e-Health access (i.e., Barriers to access), comments regarding what students liked least (i.e., Liked Least.CHIS and XCHIS), and website features and attributes that students said had prompted them to leave the site or site pages (i.e., Leave content.CHIS and Leave content.XCHIS). I set the query to show the top 100 most frequent words in these nodes.

The words circled in Figure 39 indicate words and phrases that correspond to non-engagement language—that is, that highlighted experiences of content non-use, emphasized a significant degree of program disinterest or aversion, or that expressed avoidance intentions or the disbelief that peers would use MyStudentBody or similar programs.

In Figure 39, the word “don’t” is indicative of aggregate negative sentiments

regarding features and attributes of MSB. “Drug” indicates a countervailing student view that they and many other students would not use the drug module or other modules that students believed carried a stigma (i.e., sexual health) or to be contrary to their usual behaviors (i.e., tobacco). The word “more” is part of the frequently expressed

Figure 39 Tag Cloud of Non-engagement Language



desire for more or different features or attributes on MSB (i.e., “...more interactive stuff...,” “...unlock more information...”). “Minutes” and “ninety” refer to the uniform view on the part of study participants that the 90-minute per week web-use requirement was burdensome. “Person” largely referenced comments voicing a preference to use a human resource for health information (i.e., doctor, teacher, parent, or friend). The word “wasn’t” pointed to multiple comments that describe unmet expectation (e.g., “...this website wasn’t super-specific enough,” “Mostly I thought it wasn’t at our level”). “Would” was often included in phases expressing doubts (e.g., “Why would I necessarily trust this information?”) or a desire for something more from MSB (e.g., “...it

would be better if..." or "...it would be useful if..."). "Wouldn't" was indicative of different instances of doubt (e.g., "...it wouldn't work..." or "...it wouldn't take 90 minutes") or an unwillingness to act (e.g., "...I wouldn't really spend much time there"). The word "yeah" was, as in Figure 38, an indicator of group consensus or other's agreement in response to a student's comment.

This *language of non-engagement* translates into an emergent theme of non-use of college e-Health information. Using the word frequency query results and the corresponding Figure 39 Tag Cloud words, I summarize the emergent theme as follows: There were a subgroup of focus group participants who expressed negative sentiments of doubt, dissatisfaction, or disappointment in various MyStudentBody features or attributes, particularly for topics that some perceived to hold a stigma (i.e., drugs, sexual health) or to be inconsistent with their behavioral habits (i.e., tobacco). Some comments suggested that students would be more willing to engage if site features or attributes were changed or added. Other comments suggested an unwillingness to change their non-engagement stance. Students who preferred alternatives to MSB or other e-Health programs discussed the value they placed on using human resources for health information. Students uniformly viewed the 90-minute per week MSB-use requirement as a burden.

Chapter V

Discussion, Implications, and Conclusions

Introduction

My goal in this chapter is to highlight and interpret significant findings from the College Health Information Study (CHIS) related to measuring and predicting student e-Health engagement. In addition, I will use relevant findings to inform practical recommendations for program designers and college administrators to support improvements in student e-Health engagement. I will conclude by identifying study strengths and limitations, offering considerations for future research, and positing final conclusions.

Study Overview

Undergraduates' health risk behaviors related to alcohol, drugs, tobacco, sex, stress, sleep, exercise, and diet threaten student health and academic success and undermine institutional retention rates.¹⁻⁷ On-line health education (e-Health) is a growing modality designed to reduce student health risk and support academic success, but the degree to which students engage in these programs is unclear. The purpose of this study was to identify methods for measuring student engagement in e-Health programs and to examine possible predictors of differential e-Health use.

To assess voluntary use of MyStudentBody (MSB), an online health education program, and to identify factors that influence content engagement, I performed a multi-method study involving all class years of students at Wheaton College, a four-year

private residential liberal arts college in Norton, Massachusetts. Of the 209 original study volunteers, 138 persisted through entire the study— i.e., completed the pre-study characteristics survey, accessed the MSB website during the nine-week viewing period according to their personal interests and preferences, and completed the post-study MSB engagement survey. Some volunteers also participated in post-study focus group discussions. Major categories of measurement included a baseline student survey focused on sociodemographic and psychobehavioral characteristics (independent variables) and various measures of website engagement including MSB utilization tracking data, website activity logs, a website engagement survey, and post-study focus groups (dependent variables).

The quantitative findings showed less than expected program engagement and no evidence of significant correlations between independent predictor variables and measurements of MSB engagement. Qualitative findings from the focus groups data revealed possible explanations for content use and avoidance and suggestions for student-centered strategies that might improve engagement in MSB and similar products.

Discussion of Quantitative Findings

Participant Characteristics

The study participants, except for an over-representation of females, were a representative sample of Wheaton College’s general student population. The larger number of female participants may reflect women’s well-documented tendency to

engage in health information-seeking, services, and care more than men.^{1,21,197,198}

Study completers reported higher levels of perceived general health than non-completers. This finding aligns with participant measurements on various psychobehavioral traits. For example, 71% scored as non-depressed and 67% without general anxiety disorder. Fully 93% had high levels of internal locus of control and low levels of chance locus of control. On average, participants scored high on extraversion, agreeableness, conscientiousness, emotional stability, and openness to experiences. These findings suggest that a disproportionate number of the participants were more-health conscious, less at risk, and more motivated to participate due to greater interest in learning about their health and ways to stay healthy. Students who believe they have good general health may also have a relatively greater interest in being involved in wellness-related research.

Regarding students' sexual orientation, a higher percentage of participants who reported being gay, lesbian, bisexual, or unsure (GLBU) completed the study. The reason for the high level of GLBU study participation needs further investigation.

Natural Student Engagement

Whether and how different students use content available on MyStudentBody and similar online health education programs is a relatively unexplored question. There is extremely limited documentation regarding undergraduates' voluntary unstructured use of online health education programs. A rare example is Chiauzzi's examination of the MSB-Tobacco module which showed that regular smokers who accessed MSB-

Tobacco without instructions (“unguided”) reported smoking fewer cigarettes the previous week as compared to the MSB-Tobacco group who received access instructions (“guided”), the e-Health website control group, and a no-intervention group.¹²

Exploring how undergraduates naturally use e-Health programs in the context of their daily campus lives is the next investigative step that has important practical and research implications. My study takes this next step in college e-Health research by examining students’ voluntary unguided use of MyStudentBody’s individual modules as students generally experience them. Existing research typically examines the responses to or the efficacy of an e-Health program that necessarily focuses on a single health topic or issue (e.g., alcohol, drugs, tobacco) with distinct protocols for participant access and program use. This study aimed to open a window into how students naturally use e-Health programs to address their diverse interrelated health interests, needs, and risks.

High Non-Engagement

Despite regular use of incentives and email prompts, the website engagement data showed a general rapid decline in students’ MyStudentBody engagement over the nine-week study period and significant student non-engagement overall. For example, when asked how many times per week students visited MSB, 48.2% (66) reported “never,” meaning that they did not return to the website after their initial visit. Slightly over sixty-four percent (84) reported that their average MSB session lasted 15 minutes or less; and between 46.3% (62) and 59.4% (79) reported never visiting specific individual

topic modules (alcohol, drugs, sexual health, stress, tobacco, or nutrition). Proposed indicators of e-Health engagement measured in the post-survey (i.e., revisiting MSB content; new information-seeking inspired by content use; and new actions sparked by MSB content use, including joining a related organization or discussing MSB content with others) showed that most respondents “never” or “rarely” performed these web-engagement types of activities.

The MSB utilization tracking data available for the alcohol and drug modules — so called Traffic Reports — also showed a rapid drop-off in site visits over the nine-week access period: one engagement indicator, participant revisits, happened rarely according to the Traffic Reports, verifying the students’ self-reports. Comments from MSB-Experienced focus group members also revealed this non-engagement pattern: they stated that they used MSB a lot in the first three or four weeks of the study and much less in the following weeks.

Findings from the study showed that when a representative sample of Wheaton College students were orientated and incentivized to use MyStudentBody over a nine-week period, a significant number chose not to engage or to do so only briefly. Study participants who did substantively engage (51.8%) reported their greatest involvement during the first three to four weeks of the study and a rapid diminution in use over the remaining weeks. The study’s qualitative findings, coupled with previous literature, may help explain participant’s engagement and non-engagement behaviors.

Literature Considerations

Research literature discussed previously in Chapter 2 points to explanations for e-Health non-engagement. Steinberg's profile of adolescent cognitive development is a relevant starting point. Generally speaking, the gap Steinberg describes between college students' relatively low self-regulating capacity and their novelty and sensation-seeking behaviors not only places them at health risk,⁷¹ but may also undermine their capacity for health-promoting and help-seeking behaviors, including the use of e-Health programs like MyStudentBody. This may be particularly true for college men, considering their well-documented reluctance to seek help.^{82,84-87}

Motivating Catalysts

The study's conceptual model of student e-Health information behavior (Chapter 2, Figure 1) can also contribute to a better understanding of participants' MSB engagement. In the discussion of student stress and coping, I introduced the concept of avoidance as a coping mechanism that students may employ. Avoidance, at some level, may have been in play for students who started but did not complete the study. Health communication research from Miller and Mangan¹⁷⁷ and from Krohne¹⁷⁹ found that individuals who preferred less information in the midst of stress (i.e., information avoiders or blunters) also felt increased stress when given related-health information. It is possible that participant avoiders chose not to complete or substantially engage in the study to avoid stress or to minimize it, while information-users found stress relief in content engagement.

Moderating Variables

The concepts of cognitive dissonance and selective exposure, also discussed in Chapter 2, are pertinent as possible factors related to e-Health engagement. While internal conflict regarding health-risk issues and information might drive students to MyStudentBody and other e-Health resources in search of resolution, it is also possible that such dissonance could have caused participants to selectively avoid MSB content that conflicted with their prevailing health assumptions and beliefs or to disengage completely.

Campus Environment

Elements of Wheaton's campus environment, also part of the conceptual model, include possible influencers of MSB engagement. In terms of the physical environment, the fact that wireless internet connectivity is available everywhere at Wheaton is an accessibility asset. On the other hand, it is possible that privacy may have been an issue for some during the nine-week access period. For example, MSB content relating to sex, drugs, or mental health issues may have been under-utilized or avoided for fear of intrusion and ridicule by roommates or friends. We cannot guarantee e-Health's promised benefit of personal privacy on a campus like Wheaton where dormitory doors are routinely wide open or unlocked. This may present a challenge that residence life administrators and student leaders could collaborate on to find solutions. Private cubicles in common areas of residence halls, student centers, and libraries are examples of a structural remedy.

There are also social aspects of the campus cultural environment cited in the conceptual model that may have factored in the students' level of engagement. Over the last five years Wheaton has adopted a wellness agenda and enlisted students to help establish health-related priorities and lead new change initiatives. Student involvement in programs such as tobacco sales bans and smoking reduction programs, emergency preparedness campaigns, flu vaccination drives, "No Hate" initiatives, and alcohol and sexual assault prevention campaigns have created a growing culture of "Wheaton Wellness" that students take ownership in. In that context, I pitched the study as a way for students to "help improve [their] health and make Wheaton a healthier campus."²⁵³ I believe this positive environment was an asset to the CHIS study that, to some degree, supported enrollment and participation. It is also possible that others did not resonate with the "Wheaton Wellness" movement or find the study's goals or messaging to be attractive and consequently did not get involved.

There was a small risk that students with negative experiences with MyStudentBody could have biased others against the study or MSB. Despite the fact that Wheaton had subscribed to MyStudentBody for over two years prior to the study, few students were familiar with the website. During that time, Wheaton administrators used MSB mainly for its alcohol course as an intervention component related to its BASICS (Brief Alcohol Screening and Intervention of College Students) program delivered to students following an alcohol-related policy infraction. It is possible that alcohol-sanctioned students negatively affected participant engagement by sharing their

negative MSB opinions with study candidates and participants. Of course, there is also the possibility that some alcohol-sanctioned students may have shared positive feedback and provided a supportive influence.

In considering the campus social environment, it is important to reiterate the potential influence that community members can have on students' opinions of e-Health programs. Once MSB or another e-Health program becomes a known entity on any campus, testimonials and endorsements by credible friends, faculty, and staff can help an e-Health program establish its reputation among students. Conversely, negative opinions shared by campus leaders can undermine an online health education program's success over time. Interestingly, focus group participants suggested that an important way to enlist student MSB engagement was to get student leaders to reinforce its availability and value.

Website Environment

A final intervening variable in the model that is relevant to student MSB engagement is the website environment itself, including site design, content relevance, and ease of navigation. In the previously mentioned study by Mitra et al., which examined the criteria college students use in evaluating and selecting websites, students expressed a general preference for content that was clear, concise, and relevant to their personal interests and needs.²⁰⁰ This study's focus group participants said the same thing about what made for an attractive e-Health program. Positive participant comments highlighted the attractive page design, easy navigation, and interactive and interesting

content material. Negative comments called for more concise text that spoke to students without being too preachy or moralistic and the need to highlight topics that students perceived as hidden or hard to find (e.g., prescription drug content).

Post-study survey findings showed that 58.3% to 66.1% of respondents believed the overall quality of MSB information was fair to good and 64.8% believed that MSB's information was moderately to extremely relevant to their life. This suggests that the majority of respondents believed that MSB met or exceeded a minimal standard for attracting them and meeting their health interests and needs. At the same time, it is important to recognize that more than a third of survey respondents reported that the site was less than moderately relevant and did not meet criteria for attracting their engagement.

What Students Said about Low Engagement

Student focus group members' comments point to possible reasons for their low engagement. Students almost unanimously agreed that the study's requirement that participants spend 90 minutes per week on MSB during the nine-week access period was intimidating, burdensome, and unnecessary —“daunting” was the word one student used. The general impression was that the time requirement hindered some from accessing the site. A consensus view was that students could cover their preferred MSB content in much less time. Students stated that 30 to 60 minutes per week over four to six weeks seemed like a more realistic directive, given that the website had relatively static content. These comments suggest the need to refresh content more frequently to

help encourage more lasting engagement sessions and more frequent return visits.

Several identified obstacles contributed to non-engagement. Prominent examples include the “wordiness” or text-density of some MSB pages, individual preference for human resources (i.e., clinicians, parents, and staff) over online programs, uncertainties regarding the validity of some subject content, and log-on challenges. Possible solutions include reformatting content into smaller “bite-size” sections with simple source citations, creating website access links on campus web-pages, and encouraging credible student and administrative leaders to relay testimonials that emphasize the values of e-Health resources. I discuss these and other recommendations later in this chapter.

e-Health’s Competition

Evidence suggests that MyStudentBody regularly competed with a broad collective of academic, work, and social interests that are part of students’ lives. Participants had to access MSB between February and April when their academic and social lives were progressively full, putting MSB to a tough, yet realistic challenge to gain and hold students’ attention. Consequently, MSB utilization and engagement findings are, partly, a reflection of this e-Health program’s ability to compete with students’ busy lives.

Focus group students were particularly energetic in describing the stress that results from their packed schedules and pressing workload. Almost 55% of survey respondents reported that MSB content is moderately to extremely relevant to their life, yet focus group comments suggested that students need encouragement to routinely use

the modality as a tool. Many participants said that the modality's convenience and easy access were some of its most attractive attributes, but that they relied on the weekly study prompts to remind them to revisit MSB. These findings raise the possibility of introducing e-Health programs formatted for smart phones and other mobile devices that are fast becoming ubiquitous student tools. I will address this further in the recommendations section.

Benchmarks and Web Analytics Needed

Examining MyStudentBody and other e-Health engagement in the real-world context of campus life may require new and different approaches to data collection and analysis. No benchmark data presently exist for voluntary engagement in multi-topic e-Health programs like MSB. Future studies should explore how Wheaton's engagement measures compare with schools of similar and differing profiles over the course of the entire academic year. Such data would provide a standard for future comparative analysis.

To examine utilization patterns in more detail, e-Health providers need to expand their system's tracking capacities so that institutions can create Traffic Reports that provide access to more detailed *real-time* website statistics. Examples of useful website analytics include popular page data (i.e., audience-preferred pages characterized by relatively high visit and revisit counts), visitor path tracking (i.e., audience site navigation patterns), click path analysis (i.e., frequency and pattern of mouse clicks on page and site locations), visit duration summaries, and visitor

comparisons that examine different preferences within and between demographic groups. These website analytics would help e-Health researchers, program developers, and college administrators better understand and then meet students' interests and needs.^{254,255}

Uncovering Possible Associations

There was a statistically significant negative association between the Ten-Item Personality Inventory's (TIPI) degree of conscientiousness subscale (i.e., responsibility and dependability) and the frequency of visits to the MSB-Alcohol module: specifically, respondents with higher conscientiousness scores more often reported never visiting MSB-Alcohol. It is possible that students who considered themselves responsible and dependable also characterized themselves as alcohol abstainers or moderate drinkers who would not benefit from MSB's alcohol information.

Perceived mental health and two other TIPI subscales, agreeability and openness to experience, also showed a significant negative association with the perceived relevance of MSB content to participant's life. Participants who scored higher on perceived mental health and agreeability and openness to experience tended to rate MyStudentBody as "not at all" to "moderately" relevant.

Participants who described themselves as having "excellent" to "very good" mental health and who also reported finding MSB content as "not at all" or "moderately relevant" may have believed that MyStudentBody was intended for other students, but not them. Students who believe they are "fine" may not see how MyStudentBody or

other e-Health programs could meet their immediate interests or needs.

Activity Log Non-Compliance

Only one of the 35 participants instructed to use the MSB Activity Log while accessing the website complied, despite regular email reminder prompts. I had designed the logs to provide additional measures of site use and content perceptions and to test the hypothesis that log use would bolster website engagement, but that was not possible.

I can only speculate on the reasons for this wholesale noncompliance. First, it is possible that the unstructured and unmonitored format of the study, with students using MSB at their discretion, created an environment in which consistent log use over nine weeks was unrealistic. Managing activity logs so that they were conveniently available when needed may have been too much of an organizational challenge for the average student. Other studies have had greater success with log-like tools in structured and monitored settings. For example, Franco et al. used individual checklists to document participant use of MSB-Nutrition in computer labs with research assistants present for support and indirect monitoring.¹⁶ Such methods are not compatible with the goal of examining voluntary and unmonitored e-Health use.

Students also may have thought that the 41-page booklet was too complicated, intimidating, or burdensome to use, or that the study incentives were insufficient compensation to justify the extra work. Future studies using activity logs in this context could consider more robust incentives and encouragements, a more acceptable log

design, and the use of better instructions and support protocols. Research that exclusively examines the effect of log use on e-Health engagement is warranted.

Limited Alcohol and Drug Course Completions

MyStudentBody includes an online alcohol and drug prevention course “tailored for at-risk populations: new students, athletes, Greeks, and students with judicial sanctions.”¹³⁹ Of the 138 participants who completed the study, 19 completed an alcohol or drug course pre-test, six completed the corresponding post-test, and five of those six received a passing score of 80 or better.

There are a few possible explanations for this low course involvement. First, this may simply be a reflection of the participants’ overall high level of MSB non-engagement. Second, focus group comments suggested that some students thought that, because issues like alcohol, drugs, and sex are stigmatizing, students would be less apt to seek, use, or respond to such e-Health content. Finally, it is possible that the language used to frame these courses may have factored into students choosing to avoid taking either course. The program starts by asking students if they have received instructions from their school to take one of the courses. MSB finishes their pre-instructions with the sentence: “If you do not need to take the course at this time, return to the MSB-Alcohol/Drug main page for an unrestricted view of the website.”¹³⁹ Unfortunately, this language does not effectively invite students to voluntarily complete the alcohol or drug course. Some may even read the pre-instructional content to suggest that students should not take a course unless they have received an administrative directive. MSB

administrators might address this potential challenge by including language that invites voluntary use.

The students' minimal engagement with MyStudentBody's alcohol and drug prevention courses suggest the need for more research in this area. One question is whether mandated e-Health prevention courses reach students and influence health risk behaviors differently or better than non-mandated e-Health courses. Institutions either implicitly or explicitly mandate course completion with clear negative consequences for noncompliance,^{256,257} but, to date there is no research comparing levels of knowledge and skill acquisition between mandated and non-mandated e-Health course interventions.

Discussion of Qualitative Findings

I convened two focus groups of students who reported completing the College Health Information Study and two focus groups of students unfamiliar with the study and MyStudentBody. Students' remarks provided color commentary that, at times, complimented and helped explain the quantitative findings. Their responses, which coalesced into two major themes that I call the "language of engagement" and the "language of non-engagement," also offer clues to student attitudes, interests, and actions regarding e-Health programs and point to considerations for product improvements and future research.

Focus Group Demographics

A demographically diverse sample of study participants and non-participants populated four focus groups and provided qualitative data that may help explain why

some students engaged in MSB content and others did not. While the focus groups were demographically diverse overall, the two MSB-Experienced focus groups were all white and had more females than the other groups. The MSB-Inexperienced groups were more racially and ethnically diverse and larger in number. There is a risk that the homogeneity of Groups A and B limited the diversity of perspectives, potentially biasing the findings toward certain viewpoints. Last-minute cancellations and the failure of some assigned group participants to show up compromised the MSB-Experienced group's pre-established heterogeneity. Unfortunately, facilitator and student scheduling challenges made rescheduling group sessions unfeasible.

Overview

Most students voiced the belief that MyStudentBody and e-Health programs in general are good modalities for delivering health information to students, though there was a smaller contingent of students who said that e-Health was an unattractive option. Commonly mentioned positive attributes of online health information delivery systems included perceived convenience and confidentiality. Commonly cited negative attributes of online health programs included questions regarding content reliability and a preference for learning from human resources. A majority of students said they believed MSB content was relevant to their life, and some stated that other students would use and benefit from MSB information if they received sufficient encouragements to use the website. Student comments surfaced recurrent themes that offer insight into considerations for website changes or improvements, ideas on how student leaders,

administrators, and campus clinicians can bolster MSB use, and alternative programming for students who prefer non-online interventions.

Perceived Validity of e-Health

Most focus group participants in both MSB-experienced and non-experienced groups believed online health education programs were a good way to deliver health information to students. Others voiced a preference for alternatives to e-Health products.

Positive focus group comments regarding the validity of e-Health as a valuable health information delivery system centered on convenience and confidentiality. These students stated that e-Health's relatively easy access and around-the-clock availability were the main reason it fits well in their fast-paced and unpredictable lives. That they could gain the information they needed privately without exposure to others' ridicule was also a positive feature.

Negative comments focused on personal preferences for human resources (i.e., faculty, parents, staff, clinicians, or friends), concerns regarding information credibility and reliability, and the belief that most students would not see e-Health as the best method for getting the health information they need. Students with this mindset identified four barriers to considering e-Health use: exposure to bad reviews from other students, complicated log-on challenges, ignorance regarding e-Health availability, and text-dense content.

These comments lay out the assets and challenges to e-Health's present and

future success from the all-important audience perspective. Convenience and dependability are critical for student adoption of online health programs. If MyStudentBody and similar programs can humanize their content so they are intuitive, easily comprehended, and easily linked to on-campus resources (e.g., clinicians, counselors, public safety), these programs have a greater chance of reaching and holding their target audience.

On the campus side, college administrators can maximize student e-Health acceptance and sustained use by routinely using promotional tools and other strategies presently offered by MSB and other programs to highlight targeted content and integrate the programs into students' campus life. Examples of MyStudentBody promotional tools include customizable fliers, screensavers, and a MSB "prescription pad" used to identify especially relevant content for individual students. Also available is a list of strategies and ideas to promote MSB using campus leaders and various media channels. There are also ways to customize web-pages with campus logos and content to give MSB a more local feel.

What participants said about e-Health assets and barriers also resonates with elements of the e-Health conceptual model introduced in Chapter 2. It is critical to create campus and website environments that repeatedly underscore e-Health's availability and benefits. In addition, linking web resources to other campus resources (i.e., counseling center, health center, academic advising) can help integrate the modality into students' lives so they naturally reach for e-Health when needed. Ultimately, the focus

group participants' comments suggest that more students will use e-Health as a valid resource if a program's access, convenience, and content credibility are apparent, and if the gap between online and on-campus human resources is narrowed so that students can more easily coordinate these resources.

Eye-catching Features

Facilitators asked focus group participants about e-Health features that catch their eye and cause them to stop and engage in content material. A majority of students who used MSB during the study access period honed in on the site's interactive tools such as module quizzes, humorous videos, and activities like the blood alcohol content calculator. Other students emphasized MSB's attractive graphics, site organization, and provocative headlines. These comments illustrating students' strong visual orientation, reflective of today's growing graphics, video, and mixed media information landscape, also align with recurrent comments favoring concise text and rejecting verbose articles and narratives. When we asked students what turned them off and caused them to leave MSB/e-Health content, long, text-heavy, and overly complicated content was the most frequently cited negative attribute, followed by content that participants perceived as preachy or moralistic.

It is likely that students voiced preferences for e-Health designs and content formats that reflect what they have grown accustomed to in the greater online environment: pages of mixed media that integrate pictures, video, and audio with short text, plus hyperlinks to similar mixed media pages, all designed for fast consumption.

Undergraduates, and the general public, too, have become accustomed to quick and easy “hits” of entertaining information. Television, radio, and the internet constantly vie for people’s attention with a cacophony of eye-catching headlines, pop-ups, video, and other visuals. Students will likely vote with their feet and walk away from e-Health programs if they do not offer a similar online experience. This presents an interesting challenge for e-Health designers who serve at least two audiences with potentially competing interests: students with their focus on quick, edgy, accessible, relevant, and entertaining content that meets their immediate interests, and college administrators interested in evidence-based material that reduces student health risk behaviors and aligns with their institutional values and image. Increasingly, parents are becoming a tertiary e-Health audience with their own interests and expectations.

Navigation Strategies

It is worth noting how students report navigating around MyStudentBody, considering their professed interest in easy access to relevant material. Most students reported using a combination of strategies including general browsing, directed searches, and the use of MSB’s quiz feedback recommendations. These strategies are examples of the active and passive information-seeking search behaviors identified in the conceptual model outlined in Chapter 2. Especially noteworthy is that participants frequently referenced the MSB module quizzes as a valuable way to identify potentially interesting material. The quizzes are brief questionnaires designed to gauge students’ beliefs, knowledge, and behaviors related to the module topics; present comparative

peer normative information; highlight issues of potential concern; and point to MSB content that students might find interesting based on their quiz responses. Other e-Health products provide similar tools.

Several focus group students stated that the comparative feedback was particularly attractive and interesting. "I liked hearing about myself," one student said. Even students who voiced negative opinions about the quizzes admitted that they found interesting information based on MSB's directed feedback. These comments affirm the value that students place on quizzes as a way to get the most out of their e-Health experience. Several students said that they would like to see more quiz response data presented as "pop-up factoids" to provide Wheaton-specific student health information. This idea might improve student site engagement by exposing students to quick, relevant information and pointing them to personally interesting content in a fun way.

Influencing Student Behavior

The facilitators asked students if MyStudentBody and similar e-Health programs can influence student health behaviors. Those from MSB-experienced and non-experienced groups who answered affirmatively cited three strategies for increasing a program's impact: early e-Health exposure for freshmen; using students to convey health messages; and saturating the campus with e-Health content. Regarding first-year students, it is interesting and encouraging that the students intuited what researchers and administrators have long understood regarding freshmen's risk and their receptivity to positive messages to promote behavior change.

Since these comments were made by upperclassmen, it might be tempting to dismiss the comments as easy advice for other people. But a closer look at these data showed that students recognized that it may be easier to change habits that are in their early formative stages. One student seemed to wax nostalgic, stating, "I wish I knew then what I know now." These comments not only reinforce the traditional strategy of offering e-Health prevention content to first-year students, but also underscore the potential benefits of enlisting student leaders in helping to relay this information. Using student voices to deliver e-Health content through workshops, floor meetings, and student-designed media (e.g., emails, posters, fliers) is a good way to synergize online and on-campus resources early in the freshmen year.

Other focus group members disagreed with the notion that e-Health could change student health behaviors, mostly because of their belief that it is "hard to change habits." Clearly, there are staff and faculty who share their skepticism. A valid counterpoint is that it is unlikely that any one strategy, program, or modality is capable of producing sustained positive change on its own. It is more likely that persistent use of a broad combination of strategies and tools is necessary for meaningful campus health improvements.

Addressing Health Stigmas

As mentioned earlier in this chapter, several focus group members reported their belief that MSB content relating to alcohol, drugs, and sexual health may carry a stigma for some students which causes them to avoid or limit their use of related materials. It is

important to assess and address this viewpoint. On the other hand, looking at the study's quantitative data, there is no evidence that students avoided the MSB content that the focus group participants expressed concern about. For instance, survey findings regarding module visit frequency showed alcohol to be the second, sexual health the third, and drugs the fifth most frequently visited MSB modules (MSB-nutrition: 1st, alcohol: 2nd, sexual health: 3rd, stress: 4th, drugs: 5th, tobacco: 6th). Students may have found the privacy they needed to access the e-Health information they wanted despite any perceived stigma.

Helping students engage in individual e-Health education is just the first step to creating a campus environment that promotes healthy behaviors and academic success. The next step is to move e-Health content to campus forums and other discussion and learning opportunities to catalyze the concrete culture change needed to make campus wellness a visible part of the college ethos. It is important to acknowledge, therefore, that any social stigma accompanying specific e-Health content could potentially undermine interpersonal and group discussions that might otherwise happen more naturally with more neutral health topics (e.g., stress, nutrition, or exercise).

Student Recommendations for e-Health Enhancements

The facilitators asked focus group members how would they improve MyStudentBody and to name the features and elements that would be part of an ideal college health website. Students offered broad categories of suggestions. I already discussed students' preference for compact content that allows for quick reading and

includes hyperlinks that offer story expansion and optional articles for audience members interested in more information. Students offered other ideas for MSB. One student recommended expanding the “Ask the Expert” features to include occasional live online chats, which several other participants endorsed. This idea illustrates how to narrow the gap between online and on-campus health resources. Online chats are also a way to drive new traffic to e-Health sites and catalyze on-campus conversations with web-based prompts.

Another suggestion for MSB was to add a money management section. In the present economic environment, it should come as no surprise that financial issues are on the forefront of students’ minds. For many, managing college tuition, credit cards, and everyday expenses is more challenging than ever before, making financial literacy especially important. Consequently, more college administrators are considering ways to support improved financial literacy and competence. I believe that e-Health could fill this need well. And considering the links between money, stress, and emotional and physical health, placing financial issues in a wellness frame would make a lot of sense.

Several ideas for improvements seemed to come from students’ general online experience. One example was website pop-ups that could highlight fun facts or point to interesting site content, a ubiquitous element of the web experience. Students seemed genuinely excited by the idea of surprise factoids that would grab their attention and point them to other “cool stuff.” Another general web feature that students said would enhance their e-Health experience is RSS (“really simple syndication”) feeds that present

users with updated site content selected from their individualized interest menu. In the case of MSB, students could subscribe to get updates related to different topic interests delivered to their campus email or custom campus web portal. This idea would also provide a direct line between online health and on-campus health.

Lastly, focus group participants spent a lot of time sharing e-Health wish-list ideas drawn from their social networking world. Ideas included direct links to Facebook and Twitter with corresponding feeds highlighting content reviews and allowing for related online discussions with friends and strangers. Other social networking-like features that students cited included the ability to email links for interesting content to friends and having the option to rate content.

A primary draw of social networking is the creation of an online community that has broad potential for user interactions, both on campus and beyond. I believe the marriage of social networking with e-Health has enormous potential for the student audience, as well as for administrator and parent audiences. A simple start is to tap into existing programs like Facebook and Twitter. News and entertainment mediums are already successfully using these channels to connect their content to users (and then their friends) at little to no cost. I believe the next generation of e-Health programs should consider adding social networking features to their program infrastructures. Ultimately, by bringing e-Health into students' most utilized social mediums, students would have greater opportunities for more meaningful e-Health content engagement, learning, and positive health change.

Practical Implications and Recommendations

The following are practical implications and recommendations for designers and administrative users of e-Health programs gleaned from the study's findings.

Reaching the "Unusual Suspects"

Study findings suggest that the most common student users of MyStudentBody were participants who reported having good health. Conversely, this suggests that students who have poorer health and are potentially at higher risk are generally not volunteering to use MSB or programs like it. This finding likely comes as no surprise to seasoned college administrators and e-Health professionals. In general, it is easier to get health-conscious, low risk-taking students to tap into health-focused programming, whether delivered on campus or online. I suspect that most colleges often fill health-related events, workshops, and other activities with the usual suspects of conscientious students who want to get the most of their college experience and stay out of trouble, but in fact seldom if ever engage in risky behaviors.

Often absent from these health promotions are the risky adventurers who seem more interested in exploring the limits of personal and institutional boundaries. The question of how to reach these at-risk students should extend to e-Health programming. The traditional mandates that require at-risk populations (e.g., first-year students, athletes, Greeks) to take e-Health courses or view designated e-Health materials often increase the rates of one-time e-Health visits, but their ability to spark self-motivated return visits to e-Health content is questionable. If self-motivated e-Health visits and

revisits are found to support deeper learning and longer lasting knowledge and skill retention, then it would be worth finding better ways to promote natural e-Health engagement to students who are less inclined to consider this resource.

Recommendations for Peer-to-Peer e-Health Promotion

Focus group participants repeatedly suggested that peers should be primary promoters of e-Health, stating that more students would use MSB or similar products if their friends or peer leaders such as resident advisors, preceptors (i.e., student academic mentors), athletic team captains, and student government representatives recommended them. In fact, enlisting student leaders to help transmit important resources and information to larger student populations is a commonly employed strategy.

The focus group participants offered several additional ideas for promoting e-Health engagement.

- e-Health developers should consider creating the capacity for students to send content links to campus peers. Content referrals from friends are powerful product endorsements and can be effective reminders to return to e-Health programs.
- e-Health developers should consider creating the capacity to send e-Health material to friends via popular social networking channels such as Facebook and Twitter. In addition to the tapping into the benefits of peer reminders and endorsement, these sites would allow students to engage more deeply with the content through online discussions.
- College administrators should direct resident advisors to provide e-Health orientations for freshmen during orientation week, using personal laptops to give guided website tours and employing strategies such as website scavenger hunt competitions to practice site navigation and improve content familiarity.

- College administrators should organize similar student-run e-Health orientations for student subgroups and particular campus communities (athletic teams, special interest clubs, and other student organizations).
- College administrators and student leaders should encourage various student groups and organizations to consider integrating e-Health content and materials into regular programming.
- Student Affairs staff should direct resident hall advisors to use e-Health content for regular floor programming, bulletin board content, and issue-specific student referrals.
- College administrators and student leaders should encourage student newspapers to feature college health stories citing e-Health articles or other material and invite reader responses.

Recommendations for Moving Online Content On-Campus

Another recurrent focus group recommendation was to present MyStudentBody or other e-Health content around campus to reinforce relevant content and key messages to both general and specific student audiences. Study participants said that email reminders they received during the study were useful, as they helped them remember to revisit the website in the midst of their busy routines. The potential lesson here is that students need repeated reminders to get them to access and use e-Health resources regularly. Making e-Health programs and their content more visible on campus would increase the likelihood of more students (including hard-to-reach students) giving e-Health programs a try. In addition, bringing e-Health content on campus would begin to narrow the gap between online resources and human resources by linking useful health content with trusted student, faculty, and staff who can help hard-to-reach students get what they need either online or on campus.

The following are recommendations for highlighting e-Health materials around campus:

- MSB and other e-Health developers should consider formatting websites for smart phones and other mobile devices to allow students to more easily access e-Health content.
- MSB and other e-Health developers should consider hosting web-chat discussions that use e-Health content as a catalyst for expanded campus and intercampus discussions.
- MSB and other e-Health administrators should consider hosting expert presentations on e-Health topics. E-Health sites could feature these lectures or commentaries directly on e-Health sites or through links to an e-Health sponsored YouTube site. Providers could also make this content available to students via podcasts or MP3 downloads. This material would also be available for use in classrooms and health programs.
- MSB and other e-Health developers should consider disseminating campus-specific data drawn from student surveys and quiz data to connect health topics to the local campus population. This could provide a catalyst for both informal and organized campus discussions.
- Campus administrators should consider opening an access channel to e-Health programs through campus web-portals.
- Student Affairs staff could hang e-Health posters and distribute e-Health-related fliers and other materials to students visiting campus health centers and counseling centers.
- Student Affairs staff could post e-Health fliers and topic-specific information in high traffic campus areas such as restroom stalls, libraries, cafeterias, student centers, athletic training rooms, college coffee shops, and pubs.
- Student Affairs staff should place MSB or other e-Health links on strategic campus departmental web-pages for easier website access (i.e., health services, counseling center, public safety, residence life, dining service, fitness center, athletics).

- Campus administrators should include introductions to e-Health resources in a summer mailing for new students and parents that highlights log-on information and site areas of interest.
- Student Affairs staff should orient faculty and staff to e-Health programs and encourage them to refer students to relevant website content whenever pertinent. MSB “prescription pads” or similar conventions should be used to provide clear and specific referrals to students.
- Student Affairs staff should send regular email messages to the entire student body or particular subgroups (e.g., class years, athletes or specific teams, specific resident hall populations) to highlight special e-Health content. Messages could connect to specific events or topics (e.g., spring break safety, Halloween party precautions, sexually transmitted disease prevention).
- MSB and other e-Health developers should broker text message subscriptions so that students can sign up for announcements regarding interest-specific material.
- Faculty should infuse e-Health content into the academic curriculum by linking e-Health content to class-related assignments or goals (e.g., writing projects, policy discussions, research exercises, student presentations).

Promoting Stronger e-Health Engagement

Some study findings point to suggestions for enhancing the e-Health website environment for better user access and engagement. The following recommendations are directed at e-Health administrators and designers to encourage greater student engagement.

Add More Culturally Inclusive Content

The finding that a high percentage of students identifying as gay, lesbian, bisexual, or unsure (GLBU) completed the study justifies a call for e-Health programs to offer more content that acknowledges the differing health interests and needs specific to

this and other communities. For example, addressing content related to relationships, stress, and sexual health in terms relevant to lesbian, gay, bisexual, and transgendered students would better meet those students' particular needs while helping others develop better understanding of other perspectives. Similarly, providing culturally-relevant health information for communities of color, international students, or students from different religious traditions would help meet those students' unique needs. Focus group participants specifically commented on the need for a more global and multicultural focus for e-Health programming. Ultimately, the expansion of such content in e-Health would increase students' interest and engagement.

Formatting Content for Quick Consumption

Focus group comments repeatedly addressed content formatting, especially their preference for concise text that would allow for quick information consumption. Indeed, some students seemed to find any website text that includes more than two paragraphs to be off-putting and not worth their time. It is important to acknowledge that, from my administrator's perspective, much of MyStudentBody's content is effectively formatted to make content visually inviting and accessible. Therefore, I suggest taking these students' comments as a call to continue refining the packaging of e-Health content to make it more attractive and thereby engage greater numbers of students more frequently. Students may engage in more of the e-Health material if it is consistently reformatted into smaller "chunks."

Other related suggestions include the following:

- Use bold and attractive headings to draw attention to specific content
- Present bulleted material to enable quick scanning
- Add “bottom-line” summaries at the end of articles
- Include clickable line headings that reveal expanded content
- Add more material in audio and video formats

Encouraging More e-Health Revisits

For e-Health to take root as an essential resource, it is important to motivate students to return frequently to e-Health sites after their initial visit. Note that many of the recommendations listed above regarding Smartphone accessibility, using online material on campus, and peer-to-peer communication would also serve to encourage e-Health revisits. But more needs to be done. During focus group discussions, students voiced their conclusion that the 90-minute per week MSB viewing requirement was burdensome and unnecessary because they were generally able to consume the material that interested them in the first three to four weeks. Their voiced opinion was that the content was relatively static and unchanging.

The following are recommendations for e-Health administrators and developers to encourage more student revisits.

- Implement an aggressive schedule of refreshing topic areas with new content (e.g., stories, quizzes, articles) that can attract return visits.
- Revise pre-instructions for the alcohol and drug courses using language that welcomes voluntary (non-mandated) course completion.

- Announce new content to students through channels such as RSS feeds and Facebook and Twitter messaging.
- Highlight new material on e-Health home pages and on the main pages of topic modules with simple “New” tags.
- Allow students to confirm whether they like particular content (i.e., stories, articles, tools) by clicking a “Like” button and then highlight “Most Liked” content to attract other users (a convention used on Facebook).

e-Health administrators should consider offering college administrators the capacity to gather more detailed website analytics (i.e., website “traffic report” data) to identify student navigation patterns and preferences to help better promote e-Health content.

Research Implications

Examining undergraduate engagement in online college health education programs is a relatively new line of investigative inquiry that has great potential. The possible directions this research could go is well beyond the focus of my study. I recommend the follow areas for future investigation:

- Further research into possible predictors of e-Health engagement that includes a larger population of students from different types of undergraduate institutions.
- A longitudinal comparison of mandated versus non-mandated e-Health programs, looking at student use and impact on health risk behavior.
- An investigation comparing students’ voluntary engagement in various e-Health programs (MSB, AlcoholEdu, e-CHUG).
- Research assessing best practices for encouraging student e-Health engagement.
- A study to examine the effect of activity log use on e-Health engagement.
- An examination of differential student e-Health engagement at various times of the academic year.

- Research examining the effect of campus e-Health promotion strategies on student e-Health use.

My discussions with college clinicians, health educators, and other student affairs staff across the country suggest that on-campus health education interventions (e.g., workshops, trainings, classes, dorm meetings) commonly experience the low degree of student attendance and engagement that I found in this study. Unless on-campus health programming is mandatory, few students attend, and those students who do attend college health education events typically are high achieving, low risk-taking individuals instead of the targeted risk-takers. Therefore, ways to boost active engagement in all health education programs, both on-campus and online, needs to be examined and compared.

Limitations of the Study

The College Health Information Study was limited to the examination of a relatively small number of undergraduate students from one private residential college in Massachusetts. Moreover, the findings reported here may be unique to the particular Wheaton students who participated in this study.

The sample size of 138 students who completed the study was relatively small. Despite the disproportionate number of women and underrepresentation of non-white students, the sample was a relatively good reflection of the school's overall population. Still, the poor demographic diversity of the study population is an important limitation. It is possible that inclusion of more men and greater numbers of students from various

racial and ethnic groups could have resulted in different findings.

The study used a self-selected sample by sending emailed invitations to all enrolled Wheaton students. This sampling method limits the generalizability of the findings. Participants may have been more attracted to health-related studies, more interested in online health content, and less apt to take risks compared to non-participants. It is noteworthy that even this self-selected group had limited engagement with MyStudentBody.

The study's timetable may have impacted student enrollment and levels of MyStudentBody engagement. The study straddled the fall and spring semesters. Moreover, spring break interrupted the nine-week website access period, which may have had a negative impact on study retention and student e-Health engagement following the vacation. A follow-up study would ideally run early in the fall semester.

As discussed previously, qualitative findings revealed that the requirement for participants to access MSB for a minimum of 90 minutes per week over nine weeks was burdensome and may have undermined both enrollment and later student engagement. A follow-up study would ideally shorten the length of the website access period and the weekly viewing requirement.

Only one student used and returned the MSB Activity Log, despite being provided clear instructions, adequate reminders, and incentive protocols. The log requirement given to 35 participants could have overburdened those students and caused some of them to drop out of the study or reduce their levels of e-Health

engagement. Follow-up studies should consider changing the activity log tool or eliminating that study element entirely.

The focus groups of study participants who reported accessing MyStudentBody during the website access period were homogeneous, consisting of mostly white women. Conversely, the focus groups of students who did not view the website were larger in number and significantly more racially and ethnically diverse. The different demographic make-up on these focus groups raises the potential for biased qualitative data.

Resource limitations and competition with the academic calendar compromised the study's ability to conduct individual student interviews. Student interview data might have provided additional qualitative data that offered uniquely beneficial insights. This is a study component worth considering in follow-up research.

Conclusions

In response to the threats undergraduates' health risk behaviors present to student health, safety, and academic success, administrators who promote online college health education programs need to know if, how, and why different students avoid or engage in e-Health to more effectively prevent harm and maximize student potential. The College Health Information Study contributes to the field of college e-Health research by proposing methods for measuring student engagement and examining predictors of differential student use. By asking study participants to use the e-Health program MyStudentBody at their discretion, without prescribed directives, this study

also advances inquiry into how students use e-Health programs naturally in their day-to-day college life.

Quantitative findings showed that fewer students engaged in the e-Health program than expected, and there were no significant correlations between independent predictor variables and measurements of MSB engagement. With study participants instructed to engage with the program according to their personal interests and needs, approximately 52% reported that they used MSB one or more times per week, while approximately 48% reported they never used MSB. This provides the first evidence of how an undergraduate population naturally uses an e-Health program with moderate prompts and incentives in the context of normal academic life. While this study found no significant associations between the predictor variables and the engagement measures, further explorations with alternative study protocols is worth consideration. Qualitative findings may help explain content avoidance and point to student-centered strategies that can improve engagement in MSB and similar products.

This study is part of a growing effort to understand how to better protect and promote student health, bolster college retention, and support students' academic success using the promising modality of e-Health education. Focus group data provided qualitative insights into what students do and do not find attractive and engaging in e-Health content and what they recommend as possible improvements. The data analysis also uncovered what I called the "language of engagement" and the "language of non-engagement," offering clues into why some students engaged and others did not.

Together, these quantitative and qualitative findings point to practical implications and recommendations for how e-Health designers and college administrators can improve student engagement in online college health education programs.

APPENDIX A

Weekly Engagement Booster emails

Email Subject line. CHIS: NEW MyStudentBody Surfing Tip of the Week

Hello CHIS Participant,

I hope you're well. Here's your New MyStudentBody Surfing Tip of the Week:

TIP: Try the *Ask the Expert* feature found in many of the module sections of MSB. Here's where you can see what other students are asking about sexual health, drugs, stress, tobacco, alcohol, nutrition, and exercise and read how experts in various fields respond with useful information and guidance. **Got your own burning question? Submit it anonymously.**

Examples of posted questions include:

- "What is the difference between good carbs and bad carbs?"
- "I heard someone talk about outercourse – what is it?"
- "What are academic steroids?"

Go see the experts' answers to these and many other great questions. And *Ask the Expert* your question today!

REMEMBER:

- **View MSB for 90 minutes or more so you're eligible to win one of four weekly \$25 gift cards. Winners are notified every Friday. Everyone who completes the study is eligible to win one of four \$250 gift card grand prizes.**

Thank you for your continued support. Happy Surfing!

APPENDIX B

Pre-study Baseline Survey

Baseline Characteristics Survey

The College Health Information Study

Thank you for joining the College Health Information Study and for taking this pre-study survey. Your participation is completely voluntary and confidential. You may choose not to participate in surveys, interviews or focus groups at all. Your name or email address will never be associated with your MyStudentBody.com activity, log input, or survey responses. As a study participant you may be challenged personally by certain survey questions or MyStudentBody.com (MSB) content. There is a risk of disclosure as a result of your participation in a focus group meeting. During the website viewing phase of the study you are free to navigate the MSB website at your own discretion.

This survey is confidential. None of the information you provide will be linked to you in any way. Your individual response to any question will never be identified with you or reported. This study is also voluntary. You may choose not to participate or not to answer any specific question. If there are questions you would prefer not to answer, you can choose to leave them blank, but we hope you will answer all questions as completely as you can.

If you have any questions about the study, contact Craig Andrade, principal investigator at candrade@wheatonma.edu. To participate in the College Health Information Study you must be an enrolled Wheaton student and 18 years of age or older.

If you agree to participate in the College Health Information Study, take this pre-study survey by clicking the "Next" button below. We encourage you to complete the survey in one sitting, which typically takes about 20 minutes. By linking to the survey page you are acknowledging that you are 18 years of age or older, and you are agreeing to participate in the College Health Information Study.

Thank you.

Continue to next page

Instructions: Please answer the following questions by marking the most appropriate box.

Example: ☒ or ☒

1. How old are you?

- 17 years
- 18 years
- 19 years
- 20 years
- 21 years
- 22 years
- 23 years
- 24 years
- 25 years or older

2. What is your gender?

- Female
- Male
- Transgender
- Other

3. What is your year in school?

- Freshman (1st year)
- Sophomore (2nd year)
- Junior (3rd year)
- Senior (4th/5th/6th year)
- Other

4. Have you transferred to this college within the last 12 months?

- No
- Yes

5. How do you usually describe yourself? (Mark all that apply)

- White, non Hispanic (includes Middle Eastern)
- Black, non Hispanic
- Hispanic or Latino/a
- Asian or Pacific Islander
- American Indian, Alaskan Native, or Native Hawaiian
- Biracial or Multiracial
- Other

Continue to next page

6. Are you an international student?

- No
- Yes

7. Where do you currently live?

- Campus residence hall
- Theme house
- Other college/university housing
- Parent/guardian's home
- Other off-campus housing

8. If you live off-campus or when you are not living in the residence halls with whom in your family do you live most of the time? (Mark all that apply)

- Mother
- Father
- Female caretaker/guardian
- Male caretaker/guardian
- Grandmother
- Grandfather
- Aunt
- Uncle
- Sibling(s)
- Other

9. What is your sexual orientation?

- Heterosexual
- Gay/Lesbian
- Bisexual
- Unsure

10. What is the best estimate of your family income?

- Less than \$25,000 per year
- \$25,000-\$49,999
- \$50,000-\$74,999
- \$75,000-\$99,999
- \$100,000 or more
- Unsure

11. What is the highest level of education your mother/female guardian has completed?

- No formal schooling
- Less than elementary school
- Elementary school
- Junior high school
- High school/G.E.D.
- Trade School
- Associate's Degree
- Bachelor's Degree
- Master's Degree
- PhD or equivalent
- Unsure
- Not applicable

12. What is the highest level of education your father/male guardian has completed?

- No formal schooling
- Less than elementary school
- Elementary school
- Junior high school
- High school/G.E.D.
- Trade School
- Associate's Degree
- Bachelor's Degree
- Master's Degree
- PhD or equivalent
- Unsure
- Not applicable

13. How many academic courses are you taking this semester?

- 1 course
- 2 courses
- 3 courses
- 4 courses
- 5 courses
- More than 5 courses

14. How many hours a week do you work for pay?

- 0 hours
- 1-9 hours
- 10-19 hours
- 20-29 hours
- 30-39 hours
- 40 hours
- More than 40 hours

15. How many hours a week do you volunteer?

- 0 hours
- 1-9 hours
- 10-19 hours
- 20-29 hours
- 30-39 hours
- 40 hours
- More than 40 hours

16. Are you a member of a student club, group, or organization?

- No
- Yes

17. Within the last 12 months, have you participated in organized college athletics at any of the following levels?

Varsity No Yes

Intramurals No Yes

Club Sports No Yes

18. What is your approximate cumulative grade average? (Fill in or mark the most appropriate box with an "X")

- A
- A-
- B
- B-
- C+
- C
- C-
- D/F
- Unsure

19. How would you describe your *general health*?

- Excellent
- Very good
- Good
- Fair
- Poor
- Don't know

20. How would you describe your overall *physical health*?

- Excellent
- Very good
- Good
- Fair
- Poor
- Don't know

21. How would you describe your overall *mental health*?

- Excellent
- Very good
- Good
- Fair
- Poor
- Don't know

22. Over the past two weeks how often have you...? (Mark an "X" next to the most appropriate response for each item)

	None or little of the time	Some of the time	Most of the time	All of the time
been feeling low in energy, slowed down?				
been blaming yourself for things?				
had poor appetite?				
had difficulty falling asleep, staying asleep?				
been feeling hopeless about the future?				
been feeling blue?				
been feeling no interest in things?				
had feeling of worthlessness?				
thought about or wanted to commit suicide?				
had difficulty concentrating or making decisions?				

23. These questions are to ask about things you may have felt most days in the past six months. (Mark "Yes" or "No" for each question with an "X")

	Yes	No
Most days I feel very nervous.		
Most days I worry about lots of things.		
Most days I cannot stop worrying.		
Most days my worry is hard to control.		
I feel restless, keyed up, or on edge.		
I get tired easily.		
I have trouble concentrating.		
I am easily annoyed or irritated.		
My muscles are tense and tight.		
I have trouble sleeping		
Did the things you noted above affect your daily life (home life, school life, work, or leisure) or cause you a lot of distress?		
Were the things you noted above bad enough that you thought about getting help for them?		

24. The statements below concern your personal reactions to a number of different situations. No two statements are exactly alike, so consider each statement carefully before answering. If a statement is TRUE or MOSTLY TRUE as applied to you, circle the "T" next to the question. If a statement is FALSE or NOT USUALLY TRUE as applied to you, circle the "F" next to the question.

T F	I find it hard to imitate the behavior of other people
T F	At parties and social gatherings, I do not attempt to do or say things that others will like.
T F	I can argue only for ideas that I already believe.
T F	I can make impromptu speeches even on topics about which I have almost no information
T F	I guess I put on a show to impress or entertain others.
T F	I would probably make a good actor
T F	In a group of people, I am rarely the center of attention.
T F	In different situations and with different people, I often act like very different persons
T F	I am not particularly good at making other people like me
T F	I'm not always the person I appear to be
T F	I would not change my opinions (or the way I do things) in order to please someone or win his or her favor
T F	I have considered being an entertainer
T F	I have never been good at games such as charades and improvisational acting
T F	I have trouble changing my behavior to suit different people and different situations
T F	At a party I let others keep the jokes and stories going
T F	I feel a bit awkward in company and do not come across quite as well as I should.
T F	I can look anyone in the eye and tell a lie with a straight face (if for the right end).
T F	I may deceive people by being friendly when I really dislike them.

25. Each item below is a belief statement about your health with which you may agree or disagree. Beside each statement is a scale which ranges from strongly disagree (1) to strongly agree (6). For each item please circle the number that represents the extent to which you agree or disagree with that statement. The more you agree with a statement, the higher will be the number you circle. The more you disagree with a statement, the lower will be the number you circle. Please make sure that you answer EVERY ITEM and that you circle ONLY ONE number per item. This is a measure of your personal beliefs; obviously, there are no right or wrong answers.

1=Strongly Disagree	4=Slightly Agree
2=Moderately Disagree	5=Moderately Agree
3=Slightly Disagree	6=Strongly Agree

If I get sick, it is my own behavior which determines how soon I get well again	1	2	3	4	5	6
No matter what I do, if I am going to get sick, I will get sick.	1	2	3	4	5	6
Most things that affect my health happen to me by accident.	1	2	3	4	5	6
I am in control of my health.	1	2	3	4	5	6
When I get sick, I am to blame	1	2	3	4	5	6
Luck plays a big part in determining how soon I will recover from an illness.	1	2	3	4	5	6
My good health is largely a matter of good fortune.	1	2	3	4	5	6
The main thing which affects my health is what I myself do.	1	2	3	4	5	6
If I take care of myself, I can avoid illness	1	2	3	4	5	6
No matter what I do, I'm likely to get sick.	1	2	3	4	5	6
If it's meant to be, I will stay healthy.	1	2	3	4	5	6
If I take the right actions, I can stay healthy.	1	2	3	4	5	6

26. Here are a number of personality traits that may or may not apply to you. Please circle the number that best indicates the extent to which you agree or disagree with that statement. You should rate the extent to which the pair of traits applies to you, even if one characteristic applies more strongly than the other.

I see myself as:	1 = Disagree strongly	2 = Disagree moderately	3 = Disagree a little	4 = Neither agree nor disagree	5 = Agree a little	6 = Agree moderately	7 = Agree strongly
Extraverted, enthusiastic	1	2	3	4	5	6	7
Critical, quarrelsome	1	2	3	4	5	6	7
Dependable, self-disciplined	1	2	3	4	5	6	7
Anxious, easily upset	1	2	3	4	5	6	7
Open to new experiences, complex	1	2	3	4	5	6	7
Reserved, quiet	1	2	3	4	5	6	7
Sympathetic, warm	1	2	3	4	5	6	7
Disorganized, careless	1	2	3	4	5	6	7
Calm, emotionally stable	1	2	3	4	5	6	7
Conventional, uncreative	1	2	3	4	5	6	7

APPENDIX C

Post-study Engagement Survey

MyStudentBody.com Engagement Survey

The College Health Information Study

Welcome to the College Health Information Study MSB Engagement Survey.

Thank you for participating in the study and for taking this post-study survey. Your participation is completely voluntary and confidential. As a study participant you may be challenged personally by certain survey questions. At any point, you may choose not to participate in this survey. Your name or email address will never be associated with your survey responses.

This survey is confidential. None of the information you provide will be linked to you in any way. Your individual response to any question will never be identified with you or reported. This survey is also voluntary. You may choose not to participate or not to answer any specific question. If there are questions you would prefer not to answer, you can choose to leave them blank, but we hope you will answer all questions as completely as you can.

If you have any questions about the study or this survey, contact the principle investigator, Craig Andrade at candrade@wheatonma.edu.

We encourage you to complete the survey in one sitting, which typically takes about 20 minutes. By linking to the survey page you are acknowledging that you are 18 years of age or older, and you are agreeing to participate in the College Health Information Study. Click on the "Next" button below to get started.

Thank you for your participation!

Please answer the following questions relating to your MyStudentBody.com experience by circling the most appropriate response.

1. On average how many times per week did you visit MyStudentBody.com?
 - a. Never
 - b. 1 time per week
 - c. 2 times per week
 - d. 3 times per week
 - e. More than 3 times per week
2. How long was your average individual session on MSB, in minutes?
 - a. 1-15 minutes
 - b. 16-30 minutes
 - c. 31-45 minutes
 - d. 46-60 minutes
 - e. More than 60 minutes
3. Did you complete the MSB Alcohol Course?
 - a. No
 - b. Yes
4. Did you complete the MSB Drug Course?
 - a. No
 - b. Yes
5. Did you complete a "Rate Myself" survey in any of the following MSB modules?

Place a "X" next to all that apply

Completed a <i>Rate Myself</i> survey in:	MSB-Alcohol	MSB-Drugs	MSB-Nutrition	MSB-Stress	MSB-Tobacco	MSB-Sexual Health
No						
Yes						

6. As you spent time on MyStudentBody.com, how often did you visit the following site areas?

Place a "X" next to all that apply

	Never	Very Rarely	Rarely	Occasionally	Frequently	Very Frequently
MSB-Alcohol						
MSB-Drugs						
MSB-Nutrition						
MSB-Stress						
MSB-Tobacco						
MSB-Sexual Health						

Continue to next page

7. Did you complete a "Satisfaction Survey" in any of the following MSB modules?

Place a "X" next to all that apply

Completed a Satisfaction Survey in:	MSB-Alcohol	MSB-Drugs	MSB-Nutrition	MSB-Stress	MSB-Tobacco	MSB-Sexual Health
No						
Yes						

8. As you spent time on MSB-Alcohol, how often did you visit the following module subsections?

Mark an "X" next to the most appropriate response

	Never	Very Rarely	Rarely	Occasionally	Frequently	Very Frequently
The alcohol subsection "Liquid Logic" – e.g., Alcohol & Stress, Binge Drinking; Energy Drinks & Alcohol; Boundaries, Scary Scenes, Anatomy 101"						
The alcohol subsection "Risky Routes" – e.g., Drinking & Aggression; Sexual Assault Prevention When Drinking & Hooking Up Mix, Pranks & Hazing, Controlling Anger; Alcohol & the Brain"						
The alcohol subsection "Social Scene" – e.g., Alcohol & Gender Differences; Spring Break & Partying, Chilling out; Legal Trouble Hurts Bad, Calorie Counter"						
The alcohol subsection "Trouble Brewing" – e.g., Alcohol & Judicial Consequences, Clues that Drinking is Becoming a Problem; Alcohol-Free Fun; Too much Too Soon, State Alcohol Law"						

Continue to next page

9. As you spent time on MSB-Drugs, how often did you visit the following site areas? *Mark an "X" next to the most appropriate response*

	Never	Very Rarely	Rarely	Occasionally	Frequently	Very Frequently
The drugs subsection " <i>Drug Basics</i> – e.g., Marijuana Basics; Over-the-Counter Highs; Safer Sex; My Trip with Shrooms"						
The drugs subsection " <i>Prescription Drugs</i> – e.g., Stimulants 101; Study Drugs Coasting or Crashing; Drug Myth Busters; If I Only Had Known..."						
The drugs subsection " <i>Warning Signs & Recovery</i> – e.g., How to Help a Friend, From Hopeful to Helpful; Loving an Addict. Refusal Skills"						
The drugs subsection " <i>Campus Life</i> – e.g., Coping with Loneliness; Relationships & Setting Limits. Learning my Limits the Hard Way; Meditation Techniques"						

10. As you spent time on MSB-Nutrition, how often did you visit the following site areas? *Mark an "X" next to the most appropriate response*

	Never	Very Rarely	Rarely	Occasionally	Frequently	Very Frequently
The nutrition subsection " <i>Nutrition 101</i> – e.g., Defining Healthy Eating. Balanced Plate; What's in a Label. My Nutrition IQ"						
The nutrition subsection " <i>Eating on the Run</i> – e.g., Snacking. Navigating the Cafeteria; Minding Your Meal. Cafeteria Creativity"						
The nutrition subsection " <i>Weighing In</i> – e.g., Freshmen 15 Fears. Deconstructing Diet; Body Confidence"						
The nutrition subsection " <i>Fitness</i> – e.g., Fueling Your Muscles, What is My BMI Choosing Your Carbs"						

Continue to next page

11. As you spent time on MSB-Stress, how often did you visit the following site areas? *Mark an "X" next to the most appropriate response*

	Never	Very Rarely	Rarely	Occasionally	Frequently	Very Frequently
The stress subsection "Stress 101 – Learning How to Manage Your Workload, Stress Meter; Being Spiritual; Getting Better Sleep"						
The stress subsection "Relationships – e.g., Fitting in; Parental Ties; Combating Discrimination; Twisted Thinking"						
The stress subsection "College Life – e.g., First-Year 101, Academic Stress, De-Stress at Your Desk; Studying Smart"						
The stress subsection "Health & Emotions – e.g., Learned Optimism, Grief & Loss, Anxiety; Building Self-esteem Guided Imagery"						

12. As you spent time on MSB-Tobacco how often did you visit the following site areas? *Mark an "X" next to the most appropriate response*

	Never	Very Rarely	Rarely	Occasionally	Frequently	Very Frequently
The tobacco subsection "Health Effects – e.g., Getting Hooked, Recovery Clock, Mood Cycles; Baseball Player's Dip"						
The tobacco subsection "College Life – e.g., Grades Up in Smoke, Money Spent; Teaming Up to Quit; Smoker's Smooch"						
The tobacco subsection "Quitting – Surviving Withdrawal, Informed Quitter; Evade the Crave"						

Continue to next page

13. As you spent time on MSB-Sexual Health, how often did you visit the following site areas? *Mark an "X" next to the most appropriate response*

	Never	Very Rarely	Rarely	Occasionally	Frequently	Very Frequently
The sexual health subsection "Sex 101 – e.g., STDs, the Facts; The Sex Web, Fessing Up, No Glove, No Love"						
The sexual health subsection "Sex, Drugs, & Violence – e.g., Alcohol, Mind, & Body, Cocked & Careful; Blood Alcohol Calculator, He Said, She Said"						
The sexual health subsection "Sexy, Safe, & Savvy – e.g., Sex Myths, Condoms, etc; Negotiating Safer Sex, Ode to a Male Virgin"						

14. How would you rate the overall quality of the information presented in each of the following modules? *Mark an "X" next to the most appropriate response*

	Very Poor	Fair	Good	Very Good	Excellent
MSB-Alcohol					
MSB-Drugs					
MSB-Nutrition					
MSB-Stress					
MSB-Tobacco					
MSB-Sexual Health					

15. How relevant to your life is the health information in MyStudentBody.com?
- Not at all
 - A little
 - Moderately
 - Very
 - Extremely

Continue to next page

16. How frequently did you revisit MSB information (e.g., article, strategy, tool, activity) that was interesting or useful?
 - a. Never
 - b. Rarely
 - c. Sometimes
 - d. Very Often
 - e. Always
17. How frequently did what you learned from MSB cause you to seek more information elsewhere?
 - a. Never
 - b. Rarely
 - c. Sometimes
 - d. Very Often
 - e. Always
18. How likely are you to join a health related group or cause as a result of a new interest or concern raised by MyStudentBody.com?
 - a. Not at all
 - b. A little
 - c. Moderately
 - d. Very
 - e. Extremely
19. How frequently have you discussed specific MSB information (e.g., article, strategy, tool, activity) with other people?
 - a. Never
 - b. Rarely
 - c. Sometimes
 - d. Very Often
 - e. Always
20. To what extent will you benefit from information and resources in MSB-Alcohol?
 - a. Not at all
 - b. A little
 - c. Moderately
 - d. Very
 - e. Extremely
21. To what extent will MSB-Alcohol cause you to pay more attention to your drinking?
 - a. Not at all
 - b. A little
 - c. Moderately
 - d. Very
 - e. Extremely
22. To what extent will the information you learned from MSB-Alcohol decrease your drinking?
 - a. Not at all
 - b. A little
 - c. Moderately
 - d. Very
 - e. Extremely

Continue to next page

23. How likely are you to recommend MSB-Alcohol to someone who may have a problem with alcohol?
- Not at all
 - A little
 - Moderately
 - Very
 - Extremely
24. To what extent will you benefit from information and resources in MSB-Sexual Health?
- Not at all
 - A little
 - Moderately
 - Very
 - Extremely
25. To what extent did MSB-Sexual Health expand your knowledge of STDs?
- Not at all
 - A little
 - Moderately
 - Very
 - Extremely
26. To what extent have you paid more attention to practicing safer sex as a result of your time on MSB-Sexual Health?
- Not at all
 - A little
 - Moderately
 - Very
 - Extremely
27. To what extent will the information you learned from MSB-Sexual Health will help you negotiate safer sex?
- Not at all
 - A little
 - Moderately
 - Very
 - Extremely
28. How likely are you to recommend MSB-Sexual Health to someone who may have questions about STDs, pregnancy, and other sex-related issues?
- Not at all
 - A little
 - Moderately
 - Very
 - Extremely

Continue to next page

29. To what extent will you benefit from information and resources in MSB related to nutrition and exercise?
 - a. Not at all
 - b. A little
 - c. Moderately
 - d. Very
 - e. Extremely
30. To what extent did MSB-Nutrition expand your knowledge of healthy eating habits?
 - a. Not at all
 - b. A little
 - c. Moderately
 - d. Very
 - e. Extremely
31. To what extent will MSB-Nutrition help you to pay more attention to your nutrition & physical activity habits?
 - a. Not at all
 - b. A little
 - c. Moderately
 - d. Very
 - e. Extremely
32. To what extent will MSB-Nutrition help you maintain healthy lifestyle habits?
 - a. Not at all
 - b. A little
 - c. Moderately
 - d. Very
 - e. Extremely
33. To what extent will MSB-Nutrition will help you with body image concerns?
 - a. Not at all
 - b. A little
 - c. Moderately
 - d. Very
 - e. Extremely
34. How likely are you to recommend MSB-Nutrition to a friend or other student?
 - a. Not at all
 - b. A little
 - c. Moderately
 - d. Very
 - e. Extremely
35. To what extent do you think you will benefit from information and resources MSB-Tobacco?
 - a. Not at all
 - b. A little
 - c. Moderately
 - d. Very
 - e. Extremely

Continue to next page

36. Since visiting MSB-Tobacco, to what extent have you paid more attention to your tobacco use or the tobacco use of others?
- Not at all
 - A little
 - Moderately
 - Very
 - Extremely
37. To what extent will the information you learned on MSB-Tobacco help you quit tobacco use or support someone who wants to quit?
- Not at all
 - A little
 - Moderately
 - Very
 - Extremely
38. How likely are you to recommend MSB-Tobacco to another student?
- Not at all
 - A little
 - Moderately
 - Very
 - Extremely
39. To what extent will you benefit from information and resources on MSB related to drugs, including prescription medication?
- Not at all
 - A little
 - Moderately
 - Very
 - Extremely
40. To what extent did MSB-Drugs increase your knowledge about drugs, including prescription medications?
- Not at all
 - A little
 - Moderately
 - Very
 - Extremely
41. To what extent has MSB-Drugs helped you to pay more attention to your own use of alcohol and other drugs?
- Not at all
 - A little
 - Moderately
 - Very
 - Extremely

Continue to next page

42. To what extent has MSB-Drugs helped you to know how to find support to deal with substance use issues for yourself or for a friend?
- Not at all
 - A little
 - Moderately
 - Very
 - Extremely
43. How likely are you to recommend the MSB-Drugs module to a friend or students?
- Not at all
 - A little
 - Moderately
 - Very
 - Extremely
44. To what extent will you benefit from information and resources on MSB related to mental health, stress, and stress management?
- Not at all
 - A little
 - Moderately
 - Very
 - Extremely
45. To what extent did MSB-Stress increased your knowledge of mental health and stress management issue?
- Not at all
 - A little
 - Moderately
 - Very
 - Extremely
46. To what extent do you think MSB-Stress will make you pay more attention to mental and emotional health concerns?
- Not at all
 - A little
 - Moderately
 - Very
 - Extremely
47. To what extent will the information you learned from MSB-Stress help you maintain healthy stress levels?
- Not at all
 - A little
 - Moderately
 - Very
 - Extremely

Continue to next page

48. How likely would you be to recommend MSB-Stress to other students who seem stressed or have questions about emotional and mental health?
- a. Not at all
 - b. A little
 - c. Moderately
 - d. Very
 - e. Extremely

Thank you for completing the post-study survey of the College Health Information Study

APPENDIX D

Focus group questionnaire and discussion protocol

Group _____	College Health Information Study
Date/Time: _____	Focus Group
	Participant Demographic Questionnaire
1. How old are you?	5. How do you usually describe yourself? <i>(Mark all that apply)</i>
<input type="checkbox"/> 17 years	<input type="checkbox"/> White, non Hispanic (includes Middle Eastern)
<input type="checkbox"/> 18 years	<input type="checkbox"/> Black, non Hispanic
<input type="checkbox"/> 19 years	<input type="checkbox"/> Hispanic or Latino/a
<input type="checkbox"/> 20 years	<input type="checkbox"/> Asian or Pacific Islander
<input type="checkbox"/> 21 years	<input type="checkbox"/> American Indian, Alaskan Native, or Native Hawaiian
<input type="checkbox"/> 22 years	<input type="checkbox"/> Biracial or Multiracial
<input type="checkbox"/> 23 years	<input type="checkbox"/> Other
<input type="checkbox"/> 24 years	
<input type="checkbox"/> 25 years or older	
2. What is your gender?	6. Are you an international student?
<input type="checkbox"/> Female	<input type="checkbox"/> No
<input type="checkbox"/> Male	<input type="checkbox"/> Yes
<input type="checkbox"/> Transgender	
<input type="checkbox"/> Other _____	
3. What is your year in school?	7. Where do you currently live?
<input type="checkbox"/> Freshman (1 st year)	<input type="checkbox"/> Campus residence hall
<input type="checkbox"/> Sophomore (2 nd year)	<input type="checkbox"/> Theme house
<input type="checkbox"/> Junior (3 rd year)	<input type="checkbox"/> Other college/university housing
<input type="checkbox"/> Senior (4 th , 5 th /6 th year)	<input type="checkbox"/> Parent/guardian's home
<input type="checkbox"/> Other	<input type="checkbox"/> Other off-campus housing
4. Have you transferred to this college within the last 12 months?	8. What is your major or field of interest? _____
<input type="checkbox"/> No	
<input type="checkbox"/> Yes	
	9. Are you familiar with the college health website MyStudentBody.com?
	<input type="checkbox"/> No
	<input type="checkbox"/> Yes

FOR GROUP A & B (MSB-Experienced)

Focus Group Questions College Health Information Study Wheaton College, Norton, MA

*****START BOTH RECORDERS*****

A. OPENING

1. WELCOME: Thanks for be part of this focus group. We appreciate your willingness to participate.

*****PLEASE TURN OFF YOUR CELL PHONES AND OTHER ELECTRONIC DEVICES*****

2. INTRODUCTIONS

- a Moderator;
- b Assistant Moderator/ Note-taker
- c Participants: First, I would like you to go around the room and introduce yourselves Please tell me:
 - THE AGENT CODE NAME OR NUMBER YOU'VE CHOSEN FOR THIS MEETING (e.g., "My name is Agent 99")? [Icebreaker. Applied to nametags]
 - CLASS YEAR
 - WHY YOU CHOSE TO PARTICIPATE IN THIS STUDY?

3. PAPER WORK

- a READ CONSENT FORM ALOUD ASK FOR QUESTION
- b PARTICIPANTS SIGN
- c COLLECT

4. HAVE PARTICIPANTS COMPLETE DEMOGRAPHIC FORM AND COLLECT

5. PURPOSE: Dean Andrade has asked us to conduct this focus group as part of the College Health Information Study (CHIS) THE GOAL is to learn more about your experience with MyStudentBody.com to better understand whether MSB and similar programs are viewed as resources students will use. The information learned in the focus groups will be used to improve health education websites like MSB and highlight alternatives for students with different needs and preferences.

- a A focus group is like an opinion survey, but with very general, broad questions that we will discuss as a group.
- b We will discuss whether, how and why you used MyStudentBody.
- c We're conducting the focus groups to learn whether websites are a good way to provide health information to college student.
- d We're interested in all of your ideas, comments, and suggestions regarding MSB and similar web-based programs.

NOTE: PLEASE BE HONEST. WE DO NOT WORK FOR MyStudentBody.com OR IT'S PARENT COMPANY INFLEXION. TO UNDERSTAND WHAT DOES AND DOES NOT WORK WE NEED YOUR UNFILTERED OPINIONS.

6. **GROUND RULES:** We need you to be honest and open; share your input freely.
- a. **WE WANT YOU TO DO THE TALKING.** We would like everyone to participate.
 - I may call on you if I haven't heard from you in a while.
 - b. **THERE ARE NO RIGHT OR WRONG ANSWERS**
 - Every person's experiences and opinions are important.
 - All comments – both positive and negative – are welcome.
 - Please feel free to disagree with one another. We would like to hear many points of view and a wide range of opinions.
 - c. **WE WILL BE TAPE RECORDING THE GROUP**
 - We want to capture everything you have to say.
 - With any quotes we use in our written reports, you will not be identified by name.
 - All of your comments are to be kept confidential and will be used for research purposes only.
 - d. **YOU'LL RECEIVE YOUR \$25 VISA CARD AND ADDITION GIFT AT THE END. YOU MUST SIGN THE GIFT RECEIPT FORM.**

BACKGROUND

What is MyStudentBody.com

As students enter and attend college, some may engage in behavior that puts their health and safety at risk. Families, college staff, and faculty are eager to ensure that students are happy, healthy, and safe. MyStudentBody is a health education website designed to help meet these challenges by offering:

- Alcohol and drug prevention courses for at-risk populations such as first-year and transfer students
- General wellness resources, available 24/7, to address issues related to alcohol, drugs, tobacco use, sexual health, nutrition, exercise, and stress

REFER TO HANDOUT

CHECK FOR QUESTIONS

B. ENGAGEMENT QUESTIONS

1. In general, what do you think about websites as a way to offer health information to college students?
 - a. What's good about this method?
 - b. What's not good about this method?
 - c. Are there alternative ways you'd rather get the information you need to address your health concerns?
 - What are they?
 - Why are they attractive?

C. EXPLORATION QUESTIONS

1. Describe how you used MyStudentBody.com (MSB) as a study participant
 - a. Over the last nine weeks how often did you log-in?
 - b. What days and times of the day or night did or would you generally log on to MSB?
 - c. Describe how you navigated around MSB to find interesting content?
 - What prompted you to stop at a certain MSB material?
 - What prompted you to leave certain MSB material?
2. What did you like most about MSB? Why?
3. What did you like least about MSB? Why?
4. Do you think the use of MyStudentBody.com or similar web-based programs can influence student behaviors related to alcohol, drugs, sexual health, tobacco, diet, exercise or stress?
 - a. If so, how and why could such programs influence students?
 - b. If not, why do you think they don't have an impact?
 - c. Are college health websites more likely to influence certain student behaviors more than others? If so, which behaviors and why? Please be specific.
5. How would you improve MSB? What would make you or your friends use MSB or similar programs more?
 - a. Are there features or element of your favorite websites (e.g. Facebook) you'd like to see on MSB or similar programs?

D. EXIT QUESTION

1. Do you have any other thoughts or comments about your experience using MyStudentBody or your experience in the study?

*****STOP BOTH RECORDERS*****

DON'T LEAVE BEFORE YOU SIGN FOR AND RECEIVE YOUR GIFTS!

FOR GROUP C & D (MSB-Inexperienced)

Focus Group Questions College Health Information Study Wheaton College, Norton, MA

*****START BOTH RECORDERS*****

A. OPENING

1. WELCOME: Thanks for be part of this focus group. We appreciate your willingness to participate

*****PLEASE TURN OFF YOUR CELL PHONES AND OTHER ELECTRONIC DEVICES*****

2. INTRODUCTIONS

- a. Moderator,
- b. Assistant Moderator/ Note-taker
- c. Participants. First, I would like you to go around the room and introduce yourselves Please tell me:
 - THE AGENT CODE NAME OR NUMBER YOU'VE CHOSEN FOR THIS MEETING (e.g., "My name is Agent 99")? [Icebreaker. Applied to nametags]
 - CLASS YEAR
 - WHY YOU CHOSE TO PARTICIPATE IN THIS STUDY?

3 PAPER WORK

- a. READ CONSENT FORM ALOUD. ASK FOR QUESTION
- b. PARTICIPANTS SIGN
- c. COLLECT

4. HAVE PARTICIPANTS COMPLETE DEMOGRAPHIC FORM AND COLLECT

5. PURPOSE: Dean Andrade has asked us to conduct this focus group as part of the College Health Information Study (CHIS). THE GOAL is to learn more about your experience with MyStudentBody.com to better understand whether MSB and similar programs are viewed as resources students will use. The information learned in the focus groups will be used to improve health education websites like MSB and highlight alternatives for students with different needs and preferences.

- a. A focus group is like an opinion survey, but with very general, broad questions that we will discuss as a group
- b. We will discuss whether, how and why you used MyStudentBody.
- c. We're conducting the focus groups to learn whether websites are a good way to provide health information to college student.
- d. We're interested in all of your ideas, comments, and suggestions regarding MSB and similar web-based programs

NOTE: PLEASE BE HONEST. WE DO NOT WORK FOR MyStudentBody.com OR IT'S PARENT COMPANY INFLEXXION. TO UNDERSTAND WHAT DOES AND DOES NOT WORK WE NEED YOUR UNFILTERED OPINIONS.

6. **GROUND RULES:** We need you to be honest and open; share your input freely.
- a. **WE WANT YOU TO DO THE TALKING** We would like everyone to participate.
 - I may call on you if I haven't heard from you in a while.
 - b. **THERE ARE NO RIGHT OR WRONG ANSWERS**
 - Every person's experiences and opinions are important.
 - All comments – both positive and negative – are welcome.
 - Please feel free to disagree with one another. We would like to hear many points of view and a wide range of opinions
 - c. **WE WILL BE TAPE RECORDING THE GROUP**
 - We want to capture everything you have to say.
 - With any quotes we use in our written reports, you will not be identified by name.
 - All of your comments are to be kept confidential and will be used for research purposes only.
 - d. **YOU'LL RECEIVE YOUR \$25 VISA CARD AND ADDITION GIFT AT THE END. YOU MUST SIGN THE GIFT RECEIPT FORM.**

BACKGROUND

What is MyStudentBody.com

As students enter and attend college, some may engage in behavior that puts their health and safety at risk. Families, college staff, and faculty are eager to ensure that students are happy, healthy, and safe.

MyStudentBody is a health education website designed to help meet these challenges by offering:

- Alcohol and drug prevention courses for at-risk populations such as first-year and transfer students
- General wellness resources, available 24/7, to address issues related to alcohol, drugs, tobacco use, sexual health, nutrition, exercise, and stress

REFER TO HANDOUT

CHECK FOR QUESTIONS

B. ENGAGEMENT QUESTIONS

1. In general, what do you think about websites as a way to offer health information to college students?
 - a. What's good about this method?
 - b. What's not good about this method?
 - c. Are there alternative ways you'd rather get the information you need to address your health concerns?
 - What are they?
 - Why are they attractive?

C. EXPLORATION QUESTIONS

1. Describe how you might use MyStudentBody.com (MSB)
 - a. How often do you imagine you'd use a college health website?
 - b. When you generally surf the web for non-entertain material?
 - c. Describe how you navigated around the web to find interesting non-entertainment content?
 - What prompted you to stop at a certain material?
 - What prompted you to leave certain material?
2. Do you think the use of MyStudentBody.com or similar web-based programs can influence student behaviors related to alcohol, drugs, sexual health, tobacco, diet, exercise or stress?
 - a. If so, how and why could such programs influence students?
 - b. If not, why do you think they don't have an impact?
 - c. Are college health websites more likely to influence certain student behaviors more than others? If so, which behaviors and why? Please be specific.
3. Name the features and elements that would be part of your ideal college health website.
 - a. Are there features or element of your favorite websites (e.g. Facebook) you'd like to see on MSB or similar programs?

D. EXIT QUESTION

1. Do you have any other thoughts or comments?

*****STOP BOTH RECORDERS*****

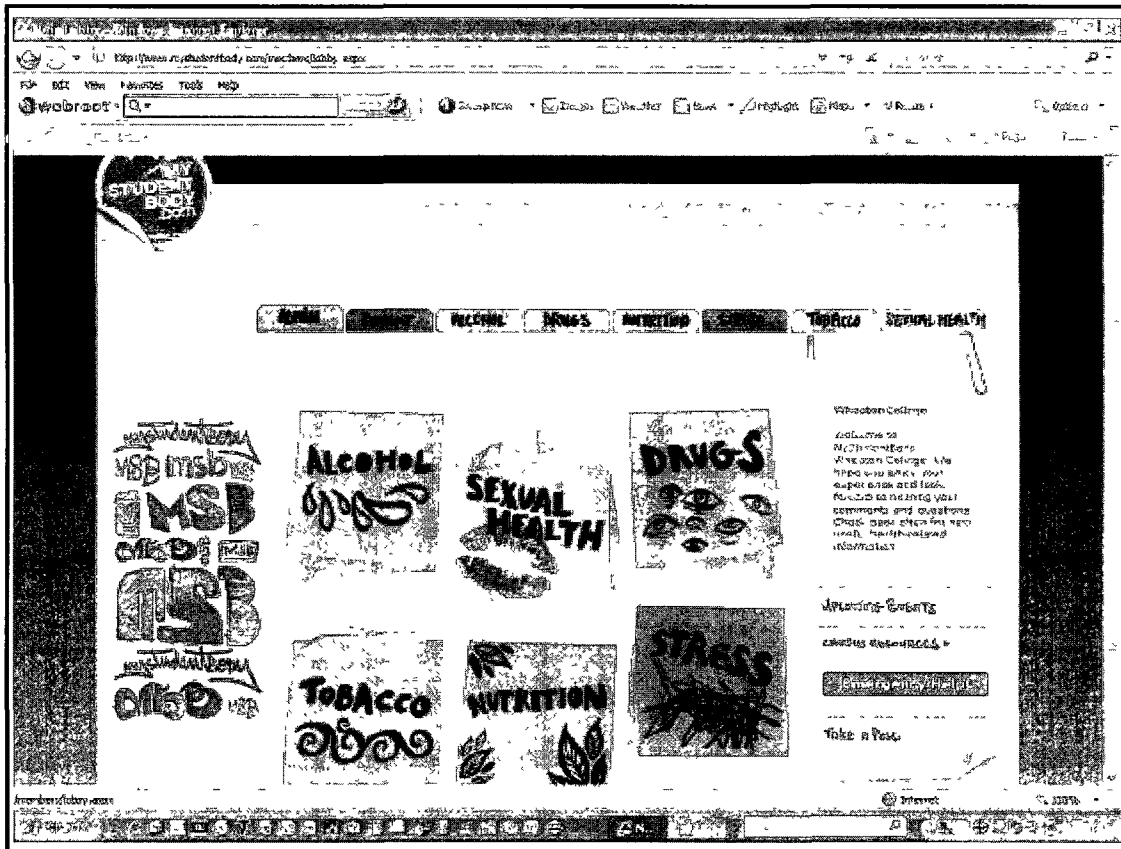
DON'T LEAVE BEFORE YOU SIGN FOR AND RECEIVE YOUR GIFTS!

Participant handout (noted on page 2 of above protocols)

What is MyStudentBody.com

As students enter and attend college, some may engage in behavior that puts their health and safety at risk. Families, college staff, and faculty are eager to ensure that students are happy, healthy, and safe. MyStudentBody is a health education website designed to help meet these challenges by offering:

- Alcohol and drug prevention courses for at-risk populations such as first-year and transfer students
- General wellness resources, available 24/7, to address issues related to alcohol, drugs, tobacco use, sexual health, nutrition, exercise, and stress



APPENDIX E

Baseline Survey Univariate Summaries (Numbers and questions match survey)

Socio-Demographic Questions

1. How old are you?		Responses	Percent
17 years:		0	0%
18 years:		24	17.30%
19 years:		34	24.64%
20 years:		31	21.61%
21 years:		36	26.09%
22 years:		7	5.07%
23 years:		3	2.17%
24 years:		0	0%
25 years or older:		0	0%
Total Responded to this question:		138	100%
Total who skipped this question:		0	0%
Total:		138	100%

2. What is your gender?		Responses	Percent
Female:		103	75.74%
Male:		33	24.26%
Transgender:		0	0%
Others:		0	0%
Total Responded to this question:		136	98.55%
Total who skipped this question:		2	1.45%
Total:		138	100%

3. What is your year in school?		Responses	Percent
Freshman (1st year):		26	18.84%
Sophomore (2nd year):		40	33.33%
Junior (3rd year):		23	16.67%
Senior (4th/5th/6th year):		43	31.16%
Other:		0	0%
Total Responded to this question:		138	100%
Total who skipped this question:		0	0%
Total:		138	100%

Baseline Survey Univariate Summaries
 (Numbers and questions match survey)

4. Have you transferred to this college within the last 12 months?		
	Responses	Percent
Yes: <input type="checkbox"/>	7	5.07%
No: <input type="checkbox"/>	131	94.93%
Total Responded to this question:	138	100%
Total who skipped this question:	0	0%
Total:	138	100%

5. How do you usually describe yourself? (Mark all that apply)		
	Responses	Percent
White, non Hispanic (includes Middle Eastern): <input type="checkbox"/>	118	85.51%
Black, non Hispanic: <input type="checkbox"/>	4	2.9%
Hispanic or Latino/a: <input type="checkbox"/>	6	4.35%
Asian or Pacific Islander: <input type="checkbox"/>	3	2.17%
American Indian, Alaskan Native, or Native Hawaiian: <input type="checkbox"/>	1	0.72%
Biracial or Multiracial: <input type="checkbox"/>	5	3.62%
Other: <input type="checkbox"/>	5	3.62%
Total Responded to this question:	138	100%
Total who skipped this question:	0	0%
Total:	138	100%

6. Are you an international student?		
	Responses	Percent
Yes: <input type="checkbox"/>	8	5.8%
No: <input type="checkbox"/>	130	94.2%
Total Responded to this question:	138	100%
Total who skipped this question:	0	0%
Total:	138	100%

Baseline Survey Univariate Summaries
(Numbers and questions match survey)

7. Where do you currently live?		
	Responses	Percent
Campus residence hall:	118	85.51%
Theme house:	12	8.7%
Other college/university housing:	4	2.9%
Parent/guardian's home:	1	0.72%
Other off-campus housing:	3	2.17%
	Total Responded to this question:	138
	Total who skipped this question:	0
	Total:	138

8. If you live off-campus or when you are not living in the residence halls with whom in your family do you live with most of the time? (Mark all that apply)		
	Responses	Percent
Mother:	97	88.99%
Father:	81	74.31%
Female caretaker/guardian:	0	0%
Male caretaker/guardian:	3	2.75%
Grandmother:	3	2.75%
Grandfather:	1	0.92%
Aunt:	2	1.83%
Uncle:	2	1.83%
Sibling(s):	63	57.8%
Other:	8	7.34%
	Total Responded to this question:	109
	Total who skipped this question:	29
	Total:	138

9. What is your sexual orientation?		
	Responses	Percent
Heterosexual:	118	85.51%
Gay/Lesbian:	6	4.35%
Bisexual:	11	7.97%
Unsure:	3	2.17%
	Total Responded to this question:	138
	Total who skipped this question:	0
	Total:	138

Baseline Survey Univariate Summaries
 (Numbers and questions match survey)

10. What is the best estimate of your family income?

	Responses	Percent
Less than \$25,000 per year:	12	8.76%
\$25,000-\$49,999:	18	13.14%
\$50,000-\$74,999:	24	17.52%
\$75,000-\$99,999:	19	13.87%
\$100,000 or more:	36	26.28%
Unsure:	28	20.44%
Total Responded to this question:	137	99.28%
Total who skipped this question:	1	0.72%
Total:	138	100%

11. What is the highest level of education your mother/female guardian has completed?

	Responses	Percent
No formal schooling:	0	0%
Less than elementary school:	0	0%
Elementary school:	0	0%
Junior high school:	2	1.46%
High school/G.E.D.:	18	13.14%
Trade School:	1	0.73%
Associate's Degree:	14	10.22%
Bachelor's Degree:	47	34.31%
Master's Degree:	37	27.01%
PhD or equivalent:	17	12.41%
Unsure:	1	0.73%
Not applicable:	0	0%
Total Responded to this question:	137	99.28%
Total who skipped this question:	1	0.72%
Total:	138	100%

Baseline Survey Univariate Summaries
 (Numbers and questions match survey)

12. What is the highest level of education your father/male guardian has completed?

	Responses	Percent
No formal schooling:	0	0%
Less than elementary school:	0	0%
Elementary school:	1	0.74%
Junior high school:	1	0.74%
High school/G.E.D.:	18	13.24%
Trade School:	7	5.15%
Associate's Degree:	6	4.41%
Bachelor's Degree:	43	31.62%
Master's Degree:	36	26.47%
PhD or equivalent:	19	13.97%
Unsure:	3	2.21%
Not applicable:	2	1.47%
Total Responded to this question:	136	98.55%
Total who skipped this question:	2	1.45%
Total:	138	100%

13. How many academic courses are you taking this semester?

	Responses	Percent
1 course:	0	0%
2 courses:	0	0%
3 courses:	8	5.97%
4 courses:	98	73.13%
5 courses:	26	19.4%
More than 5 courses:	2	1.49%
Total Responded to this question:	134	97.1%
Total who skipped this question:	4	2.9%
Total:	138	100%

Baseline Survey Univariate Summaries
 (Numbers and questions match survey)

14. What is your college major or major of interest?

	Responses	Percent
African, African American, Diaspora Studies:	1	0.72%
American Studies:	1	0.72%
Ancient Studies:	0	0%
Anthropology:	6	4.35%
Art, History:	2	1.45%
Art, Studio:	4	2.9%
Asian Studies:	1	0.72%
Astronomy:	0	0%
Astronomy and Physics:	0	0%
Biology:	7	5.07%
Biochemistry:	1	0.72%
Bioinformatics:	0	0%
Chemistry:	5	3.62%
Classical Civilization:	0	0%
Classics:	0	0%
Computer Science:	1	0.72%
Dual Degree:	1	0.72%
Dual Degree/Communications:	1	0.72%
Dual Degree/Engineering:	1	0.72%
Dual Degree/Fine Arts:	0	0%
Dual Degree/Management:	0	0%
Dual Degree/Optometry:	0	0%
Dual Degree/Religion:	0	0%
Economics:	6	4.35%
English:	10	7.25%
Environmental Science:	1	0.72%
French Studies:	2	1.45%

Baseline Survey Univariate Summaries
(Numbers and questions match survey)

German:	1	0.72%
German Studies:	0	0%
Greek:	0	0%
Hispanic Studies:	3	2.17%
History:	9	6.52%
International Relations:	7	5.07%
Italian Studies:	0	0%
Latin:	0	0%
Mathematics:	2	1.45%
Mathematics & Comp. Sciences:	0	0%
Mathematics & Economics:	1	0.72%
Music:	6	4.35%
Philosophy:	5	3.62%
Physics:	2	1.45%
Physics and Dual Degree:	0	0%
Political Science:	10	7.25%
Psychobiology:	8	5.8%
Psychology:	21	15.22%
Religion:	0	0%
Russian:	0	0%
Russian Studies:	3	2.17%
Sociology:	4	2.9%
Theatre and Dance Studies:	5	3.62%
Women's Studies:	0	0%
Total Responded to this question:	138	100%
Total who skipped this question:	0	0%
Total:	138	100%

Baseline Survey Univariate Summaries
 (Numbers and questions match survey)

15. How many hours a week do you work for pay?

	Responses	Percent	
0 hours:	39	28.47%	
1-9 hours:	80	58.39%	
10-19 hours:	14	10.22%	
20-29 hours:	3	2.19%	
40 hours:	1	0.73%	
More than 40 hours:	0	0%	
Total Responded to this question:		137	99.28%
Total who skipped this question:		1	0.72%
Total:		138	100%

16. How many hours a week do you volunteer?

	Responses	Percent	
0 hours:	97	70.29%	
1-9 hours:	38	27.54%	
10-19 hours:	0	0%	
20-29 hours:	1	0.72%	
30-39 hours:	0	0%	
40 hours:	2	1.45%	
More than 40 hours:	0	0%	
Total Responded to this question:		138	100%
Total who skipped this question:		0	0%
Total:		138	100%

17. Are you a member of a student club, group, or organization?

	Responses	Percent	
Yes:	125	90.58%	
No:	13	9.42%	
Total Responded to this question:		138	100%
Total who skipped this question:		0	0%
Total:		138	100%

Baseline Survey Univariate Summaries
(Numbers and questions match survey)

18. Within the last 12 months, have you participated in varsity level college athletics?

	Responses	Percent
Yes:	24	17.39%
No:	114	82.61%
Total Responded to this question:	138	100%
Total who skipped this question:	0	0%
Total:	138	100%

19. 16. What is your approximate cumulative grade average?

	Responses	Percent
A:	15	10.87%
A-:	48	34.78%
B:	47	34.06%
B-:	12	8.7%
C+:	6	4.35%
C:	3	2.17%
C-:	0	0%
D/F:	0	0%
Unsure:	7	5.07%
Total Responded to this question:	138	100%
Total who skipped this question:	0	0%
Total:	138	100%

20. How would you describe your general health?

	Responses	Percent
Excellent:	17	12.41%
Very good:	59	43.07%
Good:	48	35.04%
Fair:	12	8.76%
Poor:	1	0.73%
Don't know:	0	0%
Total Responded to this question:	137	99.28%
Total who skipped this question:	1	0.72%
Total:	138	100%

Baseline Survey Univariate Summaries
 (Numbers and questions match survey)

21. How would you describe your overall physical health?

	Responses	Percent
Excellent:	21	15.22%
Very good:	41	29.71%
Good:	44	31.94%
Fair:	20	14.61%
Poor:	3	2.17%
Don't know:	0	0%
Total Responded to this question:		138 100%
Total who skipped this question:		0 0%
Total:		138 100%

22. How would you describe your overall mental health?

	Responses	Percent
Excellent:	23	16.79%
Very good:	55	40.15%
Good:	35	25.55%
Fair:	19	13.87%
Poor:	4	2.92%
Don't know:	1	0.73%
Total Responded to this question:		137 99.28%
Total who skipped this question:		1 0.72%
Total:		138 100%

Baseline Survey Univariate Summaries
 (Numbers and questions match survey)

Harvard National Depression Day Screening

23. Over the past two weeks how often have you...?					
	None or little of the time	Some of the time	Most of the time	All of the time	Total
been feeling low in energy, slowed down?:	21(15.22%)	82(59.42%)	30(21.74%)	5(3.62%)	138
been blaming yourself for things?:	70(50.72%)	47(34.06%)	18(13.04%)	3(2.17%)	138
had a poor appetite?:	71(51.45%)	47(34.06%)	18(13.04%)	2(1.45%)	138
had difficulty falling asleep, staying asleep?:	53(38.41%)	51(36.96%)	26(18.84%)	8(5.8%)	138
been feeling hopeless about the future:	80(58.82%)	37(27.21%)	18(13.24%)	1(0.74%)	136
been feeling blue?:	62(45.26%)	58(42.34%)	16(11.68%)	1(0.73%)	137
been feeling no interest in things:	91(66.42%)	34(24.82%)	11(8.03%)	1(0.73%)	137
had feeling of worthlessness?:	98(72.06%)	28(20.59%)	8(5.88%)	2(1.47%)	136
thought about or wanted to commit suicide?:	127(92.7%)	10(7.3%)	0(0%)	0(0%)	137
had difficulty concentrating or making decisions?:	50(36.23%)	59(42.75%)	25(18.12%)	4(2.9%)	138
			Total Responded to this question:	138	100%
			Total who skipped this question:	0	0%
			Total:	138	100%

Baseline Survey Univariate Summaries
(Numbers and questions match survey)

Carroll-Davidson General Anxiety Disorder Screen

24. These questions are to ask about things you may have felt most days in the past six months. Mark "Yes" if you agree with the statement and mark "No" if you disagree with the statement.

	Yes (Agree)	No (Disagree)	Total
Most days I feel very nervous.:	21(15.44%)	115(84.56%)	136
Most day I worry about lots of things.:	67(48.91%)	70(51.09%)	137
Most days I cannot stop worrying.:	26(18.98%)	111(81.02%)	137
Most days my worry is hard to control.:	24(17.52%)	113(82.48%)	137
I feel restless, keyed up or on edge.:	38(27.74%)	99(72.26%)	137
I get tired easily.:	63(45.99%)	74(54.01%)	137
I have trouble concentrating.:	58(42.34%)	79(57.66%)	137
I am easily annoyed or irritated.:	46(33.58%)	91(66.42%)	137
My muscles are tense and tight.:	53(39.26%)	82(60.74%)	135
I have trouble sleeping.:	45(33.33%)	90(66.67%)	135
Did the things you noted above affect your daily life (home life, school life, or work, or leisure) or cause you a lot of distress?:	47(34.31%)	90(65.69%)	137
Were the things you noted above bad enough that you thought about getting help for them?:	31(22.63%)	106(77.37%)	137
Total Responded to this question:		137	99.28%
Total who skipped this question:		1	0.72%
Total:		138	100%

Baseline Survey Univariate Summaries
(Numbers and questions match survey)

Self-Monitoring Scale

25. The statements below concern your personal reactions to a number of different situations. No two statements are exactly alike, so consider each statement carefully before answering. If a statement is TRUE or MOSTLY TRUE as applied to you, mark "True" next to the question. If a statement is FALSE or NOT USUALLY TRUE as applied to you, mark "False" next to the statement.

	True	False	Total
I find it hard to imitate the behavior of other people:	30(21.74%)	108(78.26%)	138
At parties and social gatherings, I do not attempt to do or say things that others will like:	38(27.54%)	100(72.46%)	138
I can argue only for ideas that I already believe:	39(28.47%)	98(71.53%)	137
I can make impromptu speeches even on topics about which I have almost no information:	74(53.62%)	64(46.38%)	138
I guess I put on a show to impress or entertain others:	50(36.23%)	88(63.77%)	138
I would probably make a good actor:	69(50%)	69(50%)	138
In a group of people, I am rarely the center of attention:	63(45.65%)	75(54.35%)	138
In different situations and with different people, I often act like very different persons:	68(49.28%)	70(50.72%)	138
I am not particularly good at making other people like me:	32(23.19%)	106(76.81%)	138
I'm not always the person I appear to be:	73(52.9%)	65(47.1%)	138
I would not change my opinions (or the way I do things) in order to please someone or win his or her favor:	98(71.01%)	40(28.99%)	138
I have considered being an entertainer:	48(34.78%)	90(65.22%)	138
I have never been good at games such as charades and improvisational acting:	42(30.43%)	96(69.57%)	138
I have trouble changing my behavior to suit different people and different situations:	20(14.49%)	118(85.51%)	138
At a party I let others keep the jokes and stories going:	70(51.09%)	67(48.91%)	137
I feel a bit awkward in company and do not come across quite as well as I should:	53(38.69%)	84(61.31%)	137
I can look anyone in the eye and tell a lie with a straight face (if for the right end):	82(59.42%)	56(40.58%)	138
I may deceive people by being friendly when I really dislike them:	90(65.69%)	47(34.31%)	137
Total Responded to this question:		138	100%
Total who skipped this question:		0	0%
Total:		138	100%

Baseline Survey Univariate Summaries
(Numbers and questions match survey)

Multi-Dimensional Health Locus of Control

26. Each item below is a belief statement about your health with which you may agree or disagree. Beside each statement is a scale which ranges from strongly disagree to strongly agree. For each item please mark the rating that represents the extent to which you agree or disagree with that statement. This is a measure of your personal beliefs; obviously, there are no right or wrong answers.

	Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree	Total
If I get sick, it is my own behavior which determines how soon I get well again.:	4(2.9%)	7(5.07%)	15(10.87%)	32(23.19%)	53(38.41%)	27(19.57%)	138
No matter what I do, if I am going to get sick, I will get sick.:	13(9.49%)	44(32.12%)	37(27.01%)	21(15.33%)	14(10.22%)	8(5.84%)	137
Most things that affect my health happen to me by accident.:	18(13.04%)	37(26.81%)	39(27.54%)	24(17.39%)	12(8.7%)	9(6.52%)	138
I am in control of my health.:	3(2.17%)	3(2.17%)	10(7.25%)	36(26.09%)	48(34.78%)	38(27.54%)	138
When I get sick, I am to blame.:	12(8.7%)	20(14.49%)	39(28.26%)	42(30.43%)	22(15.94%)	3(2.17%)	138
Luck plays a big part in determining how soon I will recover from an illness.:	31(22.46%)	40(28.99%)	36(26.09%)	26(18.84%)	5(3.62%)	0(0%)	138
My good health is largely a matter of good fortune.:	26(18.84%)	41(29.71%)	29(21.01%)	28(20.29%)	13(9.42%)	1(0.72%)	138
The main thing which affects my health is what I myself do.:	6(4.38%)	4(2.92%)	13(9.49%)	40(29.2%)	48(35.04%)	26(18.98%)	137
If I take care of myself, I can avoid illness.:	3(2.17%)	5(3.62%)	10(7.25%)	27(19.57%)	62(44.93%)	31(22.46%)	138
No matter what I do, I'm likely to get sick.:	24(17.52%)	41(29.93%)	39(28.47%)	20(14.6%)	9(6.57%)	4(2.92%)	137
If it's meant to be, I will stay healthy.:	22(15.94%)	37(26.81%)	38(27.54%)	24(17.39%)	10(7.25%)	7(5.07%)	138
If I take the right actions, I can stay healthy.:	1(0.72%)	5(3.62%)	7(5.07%)	31(22.46%)	53(38.41%)	41(29.71%)	138
				Total Responded to this question:		138	100%
				Total who skipped this question:		0	0%
				Total:		138	100%

Baseline Survey Univariate Summaries
(Numbers and questions match survey)

Ten-Item Personality Inventory

27. Here are a number of personality traits that may or may not apply to you. Please mark the rating that best indicates the extent to which you agree or disagree with that statement. You should rate the extent to which the pair of traits applies to you, even if one characteristic applies more strongly than the other.

	Disagree strongly	Disagree moderately	Disagree a little	Neither agree nor disagree	Agree a little	Agree moderately	Agree strongly	Total	
I see myself as extraverted, enthusiastic:	10(7.25%)	14(10.14%)	17(12.32%)	7(5.07%)	23(16.67%)	37(26.81%)	30(21.74%)	138	
I see myself as critical, quarrelsome:	16(11.59%)	22(15.94%)	23(16.67%)	19(13.77%)	36(26.09%)	16(11.59%)	6(4.35%)	138	
I see myself as dependable, self-disciplined:	1(0.73%)	1(0.73%)	4(2.92%)	2(1.46%)	34(24.82%)	51(37.23%)	44(32.12%)	137	
I see myself as anxious, easily upset:	18(13.04%)	32(23.19%)	22(15.94%)	14(10.14%)	34(24.64%)	9(6.52%)	9(6.52%)	138	
I see myself as open to new experiences, complex:	2(1.45%)	1(0.72%)	9(6.52%)	8(5.8%)	22(15.94%)	57(41.3%)	39(28.26%)	138	
I see myself as reserved, quiet:	20(14.71%)	23(16.91%)	10(7.35%)	15(11.03%)	37(27.21%)	21(15.44%)	10(7.35%)	136	
I see myself as sympathetic, warm:	2(1.46%)	1(0.73%)	3(2.19%)	13(9.49%)	39(28.47%)	49(35.77%)	30(21.9%)	137	
I see myself as disorganized, careless:	34(24.82%)	35(25.55%)	15(10.93%)	18(13.14%)	26(18.96%)	8(5.84%)	1(0.73%)	137	
I see myself as calm, emotionally stable:	4(2.9%)	8(5.8%)	20(14.49%)	18(13.04%)	30(21.74%)	37(26.81%)	21(15.22%)	138	
I see myself as conventional, uncreative:	45(32.61%)	29(21.01%)	27(19.57%)	13(9.42%)	18(13.04%)	5(3.62%)	1(0.72%)	138	
	Total Responded to this question:							138	100%
	Total who skipped this question:							0	0%
	Total:							138	100%

Post-Study Survey Univariate Data Summary
(Numbers and questions match survey)

1. On average how many times per week did you visit MyStudentBody.com?

	Responses	Percent
Never:	66	48.18%
1 time per week:	45	32.85%
2 times per week:	13	9.49%
3 times per week:	12	8.76%
More than 3 times per week:	1	0.73%
Total Responded to this question:	137	99.28%
Total who skipped this question:	1	0.72%
Total:	138	100%



2. How long was your average individual session on MSB, in minutes?

	Responses	Percent
1-15 minutes:	84	64.12%
16-30 minutes:	24	18.32%
31-45 minutes:	13	9.92%
46-60 minutes:	7	5.34%
More than 60 minutes:	3	2.29%
Total Responded to this question:	131	94.93%
Total who skipped this question:	7	5.07%
Total:	138	100%

3. Did you complete the MSB Alcohol Course?

	Responses	Percent
No:	96	70.07%
Yes:	41	29.93%
Total Responded to this question:	137	99.28%
Total who skipped this question:	1	0.72%
Total:	138	100%

Post-Study Survey Univariate Data Summary
(Numbers and questions match survey)

4. Did you complete the MSB Drug Course?			
		Responses	Percent
No:		106	78.52%
Yes:		29	21.48%
Total Responded to this question:		135	97.83%
Total who skipped this question:		3	2.17%
Total:		138	100%

5. Did you complete a "Rate Myself" survey in any of the following MSB modules? Check "Yes" or "No" for each module.			
	No	Yes	Total
MSB-Alcohol:	81(59.56%)	55(40.44%)	136
MSB-Drugs:	89(65.11%)	47(34.89%)	136
MSB-Nutrition:	80(59.26%)	55(40.74%)	135
MSB-Stress:	86(63.24%)	50(36.76%)	136
MSB-Tobacco:	102(75.56%)	33(24.44%)	135
MSB-Sexual Health:	90(66.18%)	46(33.82%)	136
Total Responded to this question:		136	98.55%
Total who skipped this question:		2	1.45%
Total:		138	100%

6. As you spent time on MyStudentBody.com, how often did you visit the following site areas?							
	Never	Very Rarely	Rarely	Occasionally	Frequently	Very Frequently	Total
MSB-Alcohol:	62(46.27%)	14(10.45%)	11(8.21%)	27(20.15%)	16(11.94%)	4(2.99%)	134
MSB-Drugs:	66(49.25%)	15(11.19%)	22(16.42%)	21(15.67%)	8(5.97%)	2(1.49%)	134
MSB-Nutrition:	63(47.37%)	7(5.26%)	12(9.02%)	22(16.54%)	18(13.53%)	11(8.27%)	133
MSB-Stress:	63(47.73%)	10(7.58%)	14(10.61%)	18(13.64%)	17(12.88%)	10(7.56%)	132
MSB-Tobacco:	79(59.4%)	19(14.29%)	21(15.79%)	8(6.02%)	4(3.01%)	2(1.5%)	133
MSB-Sexual Health:	63(47.73%)	12(9.09%)	22(16.67%)	18(14.39%)	14(10.61%)	2(1.52%)	132
Total Responded to this question:						134	97.1%
Total who skipped this question:						4	2.9%
Total:						138	100%

Post-Study Survey Univariate Data Summary
 (Numbers and questions match survey)

7. Did you complete a "Satisfaction Survey" in any of the following MSB modules?			
	No	Yes	Total
MSB-Alcohol:	123(90.44%)	13(9.56%)	136
MSB-Drugs:	129(94.85%)	7(5.15%)	136
MSB-Nutrition:	121(86.97%)	15(11.03%)	136
MSB-Stress:	125(91.91%)	11(8.09%)	136
MSB-Tobacco:	126(94.81%)	7(5.19%)	135
MSB-Sexual Health:	125(92.59%)	10(7.41%)	135
	Total Responded to this question:	136	98.55%
	Total who skipped this question:	2	1.45%
	Total:	138	100%

8. As you spent time on MSB-Alcohol, how often did you visit the following module subsections?							
	Never	Very Rarely	Rarely	Occasionally	Frequently	Very Frequently	Total
Liquid Logic (e.g., Alcohol & Stress; Binge Drinking; Energy Drinks & Alcohol):	70(53.03%)	12(9.09%)	11(8.33%)	26(19.7%)	13(9.85%)	0(0%)	132
Risky Routes (e.g., Drinking & Aggression; Pranks & Hazing; Controlling Anger):	73(55.73%)	14(10.69%)	14(10.69%)	23(17.56%)	6(4.58%)	1(0.76%)	131
Social Scene (e.g., Alcohol & Gender Differences; Spring Break & Partying):	70(52.63%)	11(8.27%)	17(12.78%)	22(16.54%)	12(9.02%)	1(0.75%)	133
Trouble Brewing (e.g., Alcohol & Judicial Consequences; Alcohol-Free Fun):	72(54.55%)	12(9.09%)	18(13.64%)	20(15.15%)	10(7.58%)	0(0%)	132
				Total Responded to this question:	133	96.38%	
				Total who skipped this question:	5	3.62%	
				Total:	138	100%	

Post-Study Survey Univariate Data Summary
(Numbers and questions match survey)

9. As you spent time on MSB-Drugs, how often did you visit the following site areas?							
	Never	Very Rarely	Rarely	Occasionally	Frequently	Very Frequently	Total
Drug Basics (e.g., Marijuana Basics; Over-the-Counter Highs; Safer Sex):	76(57.14%)	14(10.53%)	10(7.52%)	22(16.34%)	10(7.52%)	1(0.73%)	133
Prescription Drugs (e.g., Stimulants 101; Study Drugs; Coasting or Crashing):	74(56.06%)	17(12.88%)	15(11.36%)	15(11.36%)	8(6.06%)	3(2.27%)	132
Warning Signs & Recovery (e.g., How to Help a Friend; Refusal Skills):	79(59.85%)	15(11.36%)	10(7.58%)	21(15.91%)	6(4.55%)	1(0.76%)	132
Campus Life (e.g., Coping with Loneliness; Relationships & Setting Limits):	78(58.65%)	10(7.52%)	15(11.28%)	20(15.04%)	9(6.77%)	1(0.75%)	133
Total Responded to this question:						133	96.38%
Total who skipped this question:						5	3.62%
Total:						138	100%

10. As you spent time on MSB-Nutrition, how often did you visit the following site areas?							
	Never	Very Rarely	Rarely	Occasionally	Frequently	Very Frequently	Total
Nutrition 101 (e.g., Defining Healthy Eating; Balanced Plate; What's in a Label):	69(51.49%)	12(8.96%)	5(3.73%)	22(16.42%)	22(16.42%)	4(2.99%)	134
Eating on the Run (e.g., Snacking, Navigating the Cafeteria; Minding Your Meal):	70(52.63%)	12(9.02%)	13(9.77%)	17(12.78%)	18(13.53%)	3(2.26%)	133
Weighting In (e.g., Freshmen 15 Fears; Deconstructing Diet; Body Confidence):	73(54.48%)	7(5.22%)	16(11.94%)	19(14.18%)	15(11.19%)	4(2.99%)	134
Fitness (e.g., Fueling Your Muscles; What's My BMI; Choosing Your Carbs):	70(53.03%)	13(9.85%)	9(6.82%)	18(13.64%)	13(9.85%)	9(6.82%)	132
Total Responded to this question:						134	97.1%
Total who skipped this question:						4	2.9%
Total:						138	100%

Post-Study Survey Univariate Data Summary
(Numbers and questions match survey)

11. As you spent time on MSB-Stress, how often did you visit the following site areas?							
	Never	Very Rarely	Rarely	Occasionally	Frequently	Very Frequently	Total
Stress 101 (e.g., Stress Meter; Being Spiritual; Getting Better Sleep):	69(51.49%)	14(10.45%)	18(13.43%)	16(11.94%)	15(11.19%)	2(1.49%)	134
Relationships (e.g., Fitting in; Parental Ties; Combating Discrimination):	77(57.04%)	11(8.15%)	17(12.59%)	17(12.59%)	10(7.41%)	3(2.22%)	135
College Life (e.g., First-Year 101; Academic Stress, De-Stress at Your Desk):	73(54.07%)	11(8.15%)	17(12.59%)	23(17.04%)	8(5.93%)	3(2.22%)	135
Health & Emotions (e.g., Learned Optimism; Grief, Loss & Anxiety; Guided Imagery):	75(55.97%)	14(10.45%)	11(8.21%)	18(13.43%)	12(8.96%)	4(2.99%)	134
Total Responded to this question:						135	97.83%
Total who skipped this question:						3	2.17%
Total:						138	100%

12. As you spent time on MSB-Tobacco how often did you visit the following site areas?							
	Never	Very Rarely	Rarely	Occasionally	Frequently	Very Frequently	Total
Health Effects (e.g., Getting Hooked; Recovery Clock; Mood Cycles):	88(65.19%)	15(11.11%)	9(6.67%)	18(13.33%)	5(3.7%)	0(0%)	135
College Life (e.g., Grades Up in Smoke; Money Spent; Teaming Up to Quit):	86(65.67%)	14(10.45%)	8(5.97%)	17(12.69%)	7(5.22%)	0(0%)	134
Quitting (e.g., Surviving Withdrawal; Informed Quitter; Evade the Crave):	94(69.63%)	12(8.89%)	12(8.89%)	13(9.63%)	3(2.22%)	1(0.74%)	135
Total Responded to this question:						135	97.83%
Total who skipped this question:						3	2.17%
Total:						138	100%

Post-Study Survey Univariate Data Summary
(Numbers and questions match survey)






13. As you spent time on MSB-Sexual Health, how often did you visit the following site areas?

	Never	Very Rarely	Rarely	Occasionally	Frequently	Very Frequently	Total	
Sex 101 (e.g., STDs; the Facts; The Sex Web; Fessing Up; No Glove, No Love):	76(56.20%)	10(7.41%)	13(9.80%)	17(12.00%)	0(0.67%)	1(0.74%)	135	
Sex, Drugs, & Violence (e.g., Alcohol, Mind, & Body; Cocked & Careful):	79(58.52%)	10(7.41%)	17(12.50%)	22(16.3%)	7(5.19%)	0(0%)	135	
Sexy, Safe, & Savvy (e.g., Sex Myths; Condoms, etc; Negotiating Safer Sex):	76(56.72%)	8(5.97%)	15(11.19%)	24(17.91%)	9(6.72%)	2(1.49%)	134	
	Total Responded to this question:						135	97.83%
	Total who skipped this question:						3	2.17%
	Total:						138	100%

14. How would you rate the overall quality of the information presented in each of the following modules?

	Very Poor	Fair	Good	Very Good	Excellent	Total	
MSB-Alcohol:	9(7.5%)	30(25%)	44(36.67%)	23(19.17%)	14(11.67%)	120	
MSB-Drugs:	13(10.92%)	28(23.53%)	47(39.5%)	21(17.65%)	10(8.4%)	119	
MSB-Nutrition:	11(9.17%)	28(23.33%)	47(39%)	27(22.5%)	12(10%)	120	
MSB-Stress:	9(7.56%)	25(21.01%)	48(40.34%)	28(23.53%)	9(7.56%)	119	
MSB-100ACC0:	9(7.63%)	33(27.97%)	45(38.14%)	21(17.8%)	10(8.47%)	118	
MSB-Sexual Health:	10(8.47%)	26(22.03%)	47(39.83%)	26(22.03%)	9(7.63%)	118	
	Total Responded to this question:					120	86.96%
	Total who skipped this question:					18	13.04%
	Total:					138	100%

15. How relevant to your life is the health information in MyStudentBody.com?

	Responses	Percent	
Not at all: 	18	14.06%	
A little: 	27	21.09%	
Moderately: 	56	43.75%	
Very: 	22	17.19%	
Extremely: 	5	3.91%	
	Total Responded to this question:	128	92.75%
	Total who skipped this question:	10	7.25%
	Total:	138	100%

Post-Study Survey Univariate Data Summary
 (Numbers and questions match survey)

16. How frequently did you revisit MSB information (e.g., article, strategy, tool, activity) that was interesting or useful?

	Responses	Percent
Never:	58	43.94%
Rarely:	36	27.27%
Sometimes:	26	19.7%
Very Often:	12	9.09%
Always:	0	0%
Total Responded to this question:	132	95.65%
Total who skipped this question:	6	4.35%
Total:	138	100%

17. How frequently did what you learned from MSB cause you to seek more information elsewhere?

	Responses	Percent
Never:	66	51.97%
Rarely:	27	21.26%
Sometimes:	23	18.11%
Very Often:	9	7.09%
Always:	2	1.57%
Total Responded to this question:	127	92.03%
Total who skipped this question:	11	7.97%
Total:	138	100%

18. How likely are you to join a health related group or cause as a result of a new interest or concern raised by MystudentBody.com?

	Responses	Percent
Not at all:	66	51.56%
A little:	35	27.34%
Moderately:	23	17.97%
Very:	3	2.34%
Extremely:	1	0.78%
Total Responded to this question:	128	92.75%
Total who skipped this question:	10	7.25%
Total:	138	100%

Post-Study Survey Univariate Data Summary
(Numbers and questions match survey)

19. How frequently have you discussed specific MSB information (e.g., article, strategy, tool, activity) with other people?

	Responses	Percent
Never:	74	55.64%
Rarely:	30	22.56%
Sometimes:	20	15.04%
Very Often:	8	6.02%
Always:	1	0.75%
Total Responded to this question:	133	96.38%
Total who skipped this question:	5	3.62%
Total:	138	100%

20. To what extent will you benefit from information and resources in MSB-Alcohol?

	Responses	Percent
Not at all:	51	39.84%
A little:	30	23.44%
Moderately:	30	23.44%
Very:	15	11.72%
Extremely:	2	1.56%
Total Responded to this question:	128	92.75%
Total who skipped this question:	10	7.25%
Total:	138	100%

21. To what extent will MSB-Alcohol cause you to pay more attention to your drinking?

	Responses	Percent
Not at all:	62	46.97%
A little:	29	21.97%
Moderately:	25	19.7%
Very:	11	8.33%
Extremely:	4	3.01%
Total Responded to this question:	132	95.65%
Total who skipped this question:	6	4.35%
Total:	138	100%

Post-Study Survey Univariate Data Summary
 (Numbers and questions match survey)

22. To what extent will the information you learned from MSB-Alcohol decrease your drinking?

	Responses	Percent
Not at all:	79	59.85%
A little:	20	15.15%
Moderately:	25	18.94%
Very:	6	4.55%
Extremely:	2	1.52%
Total Responded to this question:	132	95.65%
Total who skipped this question:	6	4.35%
Total:	138	100%

23. How likely are you to recommend MSB-Alcohol to someone who may have a problem with alcohol?

	Responses	Percent
Not at all:	49	37.4%
A little:	29	22.14%
Moderately:	30	22.9%
Very:	17	12.98%
Extremely:	6	4.58%
Total Responded to this question:	131	94.93%
Total who skipped this question:	7	5.07%
Total:	138	100%

24. To what extent will you benefit from information and resources in MSB-Sexual Health?

	Responses	Percent
Not at all:	50	38.17%
A little:	41	31.3%
Moderately:	28	21.37%
Very:	8	6.11%
Extremely:	4	3.05%
Total Responded to this question:	131	94.93%
Total who skipped this question:	7	5.07%
Total:	138	100%

Post-Study Survey Univariate Data Summary
 (Numbers and questions match survey)

25. To what extent did MSB-Sexual Health expand your knowledge of STDs?

	Responses	Percent
Not at all:	59	45.74%
A little:	34	26.36%
Moderately:	25	19.38%
Very:	9	6.98%
Extremely:	2	1.55%
Total Responded to this question:	129	93.48%
Total who skipped this question:	9	6.52%
Total:	138	100%

26. To what extent have you paid more attention to practicing safer sex as a result of your time on MSB-Sexual Health?

	Responses	Percent
Not at all:	73	56.59%
A little:	28	21.71%
Moderately:	14	10.85%
Very:	11	8.53%
Extremely:	3	2.33%
Total Responded to this question:	129	93.48%
Total who skipped this question:	9	6.52%
Total:	138	100%

27. To what extent will the information you learned from MSB-Sexual Health will help you negotiate safer sex?

	Responses	Percent
Not at all:	61	48.03%
A little:	29	22.83%
Moderately:	21	16.54%
Very:	13	10.24%
Extremely:	3	2.36%
Total Responded to this question:	127	92.03%
Total who skipped this question:	11	7.97%
Total:	138	100%

Post-Study Survey Univariate Data Summary
 (Numbers and questions match survey)

28. How likely are you to recommend MSB-Sexual Health to someone who may have questions about STDs, pregnancy, and other sex-related issues?

	Responses	Percent
Not at all:	17	36.13%
A little:	30	23.26%
Moderately:	26	20.16%
Very:	20	15.5%
Extremely:	6	4.65%
Total Responded to this question:	129	93.48%
Total who skipped this question:	9	6.52%
Total:	138	100%

29. To what extent will you benefit from information and resources in MSB related to nutrition and exercise?

	Responses	Percent
Not at all:	49	38.89%
A little:	20	20.63%
Moderately:	29	23.02%
Very:	13	10.32%
Extremely:	6	7.14%
Total Responded to this question:	126	91.3%
Total who skipped this question:	12	8.7%
Total:	138	100%

30. To what extent did MSB-Nutrition expand your knowledge of healthy eating habits?

	Responses	Percent
Not at all:	49	38.28%
A little:	34	20.56%
Moderately:	21	16.41%
Very:	19	14.84%
Extremely:	5	3.01%
Total Responded to this question:	128	92.75%
Total who skipped this question:	10	7.25%
Total:	138	100%

Post-Study Survey Univariate Data Summary
 (Numbers and questions match survey)

31. To what extent will MSB-Nutrition help you to pay more attention to your nutrition & physical activity habits?

	Responses	Percent
Not at all:	54	42.86%
A little:	24	19.05%
Moderately:	28	22.22%
Very:	15	11.9%
Extremely:	5	3.97%
Total Responded to this question:	126	91.3%
Total who skipped this question:	12	8.7%
Total:	138	100%

32. To what extent will MSB-Nutrition help you maintain healthy lifestyle habits (e.g., regular exercise, quality rest, nutritious eating)?

	Responses	Percent
Not at all:	53	42.4%
A little:	25	20%
Moderately:	31	24.8%
Very:	12	9.6%
Extremely:	4	3.2%
Total Responded to this question:	125	90.58%
Total who skipped this question:	13	9.42%
Total:	138	100%

33. To what extent will MSB-Nutrition will help you with body image concerns?

	Responses	Percent
Not at all:	66	52.8%
A little:	22	17.6%
Moderately:	29	23.2%
Very:	7	5.6%
Extremely:	1	0.8%
Total Responded to this questions:	125	90.58%
Total who skipped this questions:	13	9.42%
Total:	138	100%

Post-Study Survey Univariate Data Summary
 (Numbers and questions match survey)

34. How likely are you to recommend MSB-Nutrition to a friend or other student?

	Responses	Percent
Not at all:	49	39.2%
A little:	29	23.2%
Moderately:	32	25.6%
Very:	11	8.8%
Extremely:	4	3.2%
Total Responded to this question:	125	90.58%
Total who skipped this question:	13	9.42%
Total:	138	100%

35. To what extent do you think you will benefit from MSB-Tobacco Information and resources?

	Responses	Percent
Not at all:	81	63.78%
A little:	25	19.69%
Moderately:	17	13.39%
Very:	4	3.15%
Extremely:	0	0%
Total Responded to this question:	127	92.03%
Total who skipped this question:	11	7.97%
Total:	138	100%

36. Since visiting MSB-Tobacco, to what extent have you paid more attention to your tobacco use or the tobacco use of others?

	Responses	Percent
Not at all:	77	61.0%
A little:	25	20%
Moderately:	16	12.6%
Very:	5	4%
Extremely:	2	1.6%
Total Responded to this question:	125	90.58%
Total who skipped this question:	13	9.42%
Total:	138	100%

Post-Study Survey Univariate Data Summary
 (Numbers and questions match survey)

37. To what extent will the information you learned on MSB-Tobacco help you quit tobacco use or support someone who wants to quit?

	Responses	Percent
Not at all:	73	57.04%
A little:	24	19.05%
Moderately:	20	15.87%
Very:	4	3.17%
Extremely:	5	3.97%
Total Responded to this question:	126	91.3%
Total who skipped this question:	12	8.7%
Total:	138	100%

38. How likely are you to recommend MSB-Tobacco to another student?

	Responses	Percent
Not at all:	55	43.31%
A little:	35	27.56%
Moderately:	20	15.75%
Very:	11	8.66%
Extremely:	6	4.72%
Total Responded to this question:	127	92.03%
Total who skipped this question:	11	7.97%
Total:	138	100%

39. To what extent will you benefit from information and resources on MSB related to drugs, including prescription medication?

	Responses	Percent
Not at all:	67	54.03%
A little:	23	18.55%
Moderately:	22	17.74%
Very:	10	8.06%
Extremely:	2	1.61%
Total Responded to this question:	124	89.80%
Total who skipped this question:	14	10.14%
Total:	138	100%

Post-Study Survey Univariate Data Summary
 (Numbers and questions match survey)

40. To what extent did MSB-Drugs increase your knowledge about drugs, including prescription medications?

	Responses	Percent
Not at all:	62	50%
A little:	23	18.55%
Moderately:	28	22.58%
Very:	9	7.26%
Extremely:	2	1.61%
Total Responded to this question:	124	89.86%
Total who skipped this question:	14	10.14%
Total:	138	100%

41. To what extent has MSB-Drugs helped you to pay more attention to your own use of alcohol and other drugs?

	Responses	Percent
Not at all:	67	54.03%
A little:	25	20.16%
Moderately:	20	20.97%
Very:	2	1.61%
Extremely:	4	3.23%
Total Responded to this question:	124	89.86%
Total who skipped this question:	14	10.14%
Total:	138	100%

42. To what extent has MSB-Drugs helped you to know how to find support to deal with substance use issues for yourself or for a friend?

	Responses	Percent
Not at all:	68	54.4%
A little:	25	20%
Moderately:	23	18.4%
Very:	7	5.6%
Extremely:	2	1.6%
Total Responded to this question:	125	90.58%
Total who skipped this question:	13	9.42%
Total:	138	100%

Post-Study Survey Univariate Data Summary
 (Numbers and questions match survey)

43. How likely are you to recommend the MSB-Drugs module to a friend or students?

	Responses	Percent
Not at all:	57	44.88%
A little:	28	22.05%
Moderately:	25	19.69%
Very:	11	8.66%
Extremely:	6	4.77%
Total Responded to this question:	127	92.03%
Total who skipped this question:	11	7.97%
Total:	138	100%

44. To what extent will you benefit from information and resources on MSB related to mental health, stress, and stress management?

	Responses	Percent
Not at all:	54	43.55%
A little:	25	20.16%
Moderately:	29	23.39%
Very:	12	9.68%
Extremely:	4	3.23%
Total Responded to this question:	124	89.86%
Total who skipped this question:	14	10.14%
Total:	138	100%

45. To what extent did MSB-Stress increased your knowledge of mental health and stress management issues?

	Responses	Percent
Not at all:	50	40.65%
A little:	27	21.95%
Moderately:	31	25.2%
Very:	10	8.13%
Extremely:	5	4.07%
Total Responded to this question:	123	89.13%
Total who skipped this questions:	15	10.87%
Total:	138	100%

APPENDIX F

Qualitative Data from Focus Groups Using NVivo: Major Tree Note Category Headings and Source and Reference Counts

Tree Nodes

	Name	Sources	References	Created On	Created	Modified On
[-]	e-Health Education	0	0	8/2/2010 9:26 PM	CSA	8/2/2010 9:26 PM
[-]	Alternatives to e-Health	4	18	8/2/2010 9:57 PM	CSA	8/8/2010 5:09 PM
[-]	MSB Good CHIS	1	3	8/4/2010 2:32 PM	CSA	8/7/2010 12:48 PM
[-]	MSB Bad CHIS	1	17	8/4/2010 2:33 PM	CSA	8/7/2010 12:48 PM
[-]	MSB Use CHIS	2	37	8/2/2010 10:03 PM	CSA	8/8/2010 9:46 PM
[-]	Predicted Use XCHIS	0	0	8/2/2010 10:21 PM	CSA	8/4/2010 2:33 PM
[-]	Liked Most CHIS	2	31	8/2/2010 10:14 PM	CSA	8/7/2010 12:53 PM
[-]	Liked Least CHIS	2	19	8/2/2010 10:17 PM	CSA	8/7/2010 12:53 PM
[-]	MSB Influence Behavior CHIS	2	35	8/2/2010 10:32 PM	CSA	8/8/2010 9:46 PM
[-]	Change Recommendations CHIS	2	101	8/2/2010 10:50 PM	CSA	8/7/2010 12:57 PM
[-]	MSB Influence Behavior XCHIS	0	0	8/2/2010 10:40 PM	CSA	8/4/2010 2:33 PM
[-]	Ideal Health Web Features XCHI	2	46	8/2/2010 10:53 PM	CSA	8/7/2010 1:00 PM
[-]	Other thoughts CHIS	0	0	8/2/2010 10:57 PM	CSA	8/4/2010 2:33 PM
	Other thought XCHIS	0	0	8/2/2010 10:57 PM	CSA	8/4/2010 2:33 PM
	Other websites	0	0	8/4/2010 5:51 PM	CSA	8/4/2010 5:51 PM
	Ways to promote MSB	1	2	8/5/2010 5:48 PM	CSA	8/5/2010 5:49 PM
[-]	First Impressions XCHIS	2	11	8/5/2010 6:46 PM	CSA	8/7/2010 1:01 PM

Tree Node Categories with Corresponding Child Node Categories and Source and Reference Counts

Tree Nodes

Name	Sources	References	Created On	Created	Modified On
[-] e-Health Education	0	0	8/2/2010 9 26 PM	CSA	8/2/2010 9 26 PM
[-] Good idea CHIS	2	15	8/2/2010 9 29 PM	CSA	8/7/2010 11
[-] autonomy	1	2	8/4/2010 2 15 PM	CSA	8/4/2010 2 19
[-] Credible and confidential	2	3	8/3/2010 4 34 PM	CSA	8/4/2010 5 54
[-] convenience	2	11	8/3/2010 4 11 PM	CSA	8/4/2010 2 52
[-] Bad idea CHIS	2	11	8/2/2010 9 31 PM	CSA	8/7/2010 12
[-] hard to find	1	1	8/3/2010 4 17 PM	CSA	8/3/2010 4 18
[-] not a live person	2	7	8/3/2010 4 50 PM	CSA	8/4/2010 5 41
[-] Limitations	2	2	8/3/2010 4 58 PM	CSA	8/4/2010 2 53
[-] Question reliability	1	2	8/4/2010 2 29 PM	CSA	8/4/2010 2 39
[-] Good idea XCHIS	2	13	8/2/2010 9 32 PM	CSA	8/7/2010 12
[-] Convemnt	2	4	8/5/2010 4 17 PM	CSA	8/6/2010 6 56
[-] Inexpensive	1	1	8/5/2010 4 17 PM	CSA	8/5/2010 4 18
[-] Good first step	2	2	8/5/2010 4 18 PM	CSA	8/6/2010 6 57
[-] good, if customizable	1	1	8/5/2010 4 39 PM	CSA	8/5/2010 4 40
[-] conflicted	1	1	8/5/2010 4 53 PM	CSA	8/5/2010 4 53
[-] accessible	2	3	8/5/2010 5 04 PM	CSA	8/6/2010 6 58
[-] Confidential	2	2	8/5/2010 5 07 PM	CSA	8/6/2010 6 57
[-] Comfortable	1	1	8/6/2010 6 58 AM	CSA	8/6/2010 6 59
[-] Reliable	1	1	8/6/2010 7 00 AM	CSA	8/6/2010 7 01
[-] WebMD	1	1	8/6/2010 7 18 AM	CSA	8/6/2010 7 18
[-] Bad idea XCHIS	2	22	8/2/2010 9 50 PM	CSA	8/7/2010 12
[-] Hard to manage	1	1	8/5/2010 4 22 PM	CSA	8/5/2010 4 22
[-] Not student's way	1	4	8/5/2010 4 37 PM	CSA	8/5/2010 5 55
[-] Good first step	1	1	8/5/2010 4 44 PM	CSA	8/5/2010 4 44
[-] Question credibility	2	5	8/5/2010 4 45 PM	CSA	8/6/2010 7 04
[-] too many to choose from	1	2	8/5/2010 4 46 PM	CSA	8/5/2010 4 48

Tree Nodes

Name	Sources	References	Created On	Created	Modified On
Prefer general health	1	1	8/5/2010 4 50 PM	CSA	8/5/2010 4 51
Prefer a person	1	2	8/5/2010 5 02 PM	CSA	8/5/2010 5 16
suspicious of political agenda	1	3	8/5/2010 5 03 PM	CSA	8/5/2010 7 20
Suspicion of colleg spy tool	1	1	8/5/2010 6 54 PM	CSA	8/5/2010 6 55
Dangerous	1	8	8/6/2010 7 01 AM	CSA	8/6/2010 7 05
Barriers to access	4	13	8/3/2010 4 20 PM	CSA	8/6/2010 7 !
Questions of legitimacy	1	1	8/3/2010 4 24 PM	CSA	8/3/2010 4 25
Bad peer reviews	1	2	8/3/2010 4 24 PM	CSA	8/3/2010 4 25
General skepticism of websites	1	1	8/3/2010 4 26 PM	CSA	8/3/2010 4 29
Unaware site's there	1	2	8/3/2010 4 30 PM	CSA	8/3/2010 7 24
Log on difficulty	1	2	8/3/2010 4 32 PM	CSA	8/3/2010 7 24
too wordy	1	1	8/4/2010 4 53 PM	CSA	8/4/2010 4 53
can be hard interpret meaning	1	1	8/4/2010 5 03 PM	CSA	8/4/2010 5 04
Assume issue does not apply t	1	1	8/4/2010 5 04 PM	CSA	8/4/2010 5 05
Alternatives to e-Health	4	18	8/2/2010 9 57 PM	CSA	8/8/2010 5 09 PM
Alternatives according to CHIS	2	7	8/2/2010 10 01 PM	CSA	8/7/2010 12
Actual doctor or nurse	1	3	8/3/2010 4 40 PM	CSA	8/3/2010 4 45
Benefit	1	4	8/3/2010 4 49 PM	CSA	8/3/2010 4 53
health class	1	1	8/4/2010 5 07 PM	CSA	8/4/2010 5 07
Other websites	1	2	8/4/2010 5 51 PM	CSA	8/4/2010 5 52
Peer run education	1	1	8/4/2010 5 58 PM	CSA	8/4/2010 5 58
Benefit	1	4	8/7/2010 12 47 PM	CSA	8/7/2010 12 4
Alternatives according to XCHIS	2	11	8/2/2010 10 02 PM	CSA	8/7/2010 12
Brochures	2	3	8/5/2010 4 23 PM	CSA	8/6/2010 7 08
Ongoing health talks	1	2	8/5/2010 5 19 PM	CSA	8/5/2010 5 20
RA health talks	1	1	8/5/2010 5 24 PM	CSA	8/5/2010 5 24

Tree Nodes

Name	Sources	References	Created On	Created	Modified On
Residence bulliten boards	1	1	8/5/2010 5 32 PM	CSA	8/5/2010 5 32
Peers	1	1	8/6/2010 7 08 AM	CSA	8/6/2010 7 08
Parents	1	2	8/6/2010 7 08 AM	CSA	8/6/2010 7 10
Doctors	1	1	8/6/2010 7 09 AM	CSA	8/6/2010 7 09
Teachers	1	1	8/6/2010 7 09 AM	CSA	8/6/2010 7 10
Atractiveness of alternatives	0	0	8/6/2010 7 11 AM	CSA	8/6/2010 7 11
more personal	1	1	8/6/2010 7 13 AM	CSA	8/6/2010 7 13
more private	1	1	8/6/2010 7 13 AM	CSA	8/6/2010 7 14
more legitimate	1	1	8/6/2010 7 14 AM	CSA	8/6/2010 7 14
trusted relationship	1	2	8/6/2010 7 15 AM	CSA	8/6/2010 7 15
RA health talks	1	1	8/7/2010 12 47 PM	CSA	8/7/2010 12 4
more personal	1	1	8/7/2010 12 47 PM	CSA	8/7/2010 12 4
more private	1	1	8/7/2010 12 47 PM	CSA	8/7/2010 12 4
more legitimate	1	1	8/7/2010 12 47 PM	CSA	8/7/2010 12 4
trusted relationship	1	2	8/7/2010 12 47 PM	CSA	8/7/2010 12 4
Brochures	2	3	8/8/2010 5 09 PM	CSA	8/8/2010 5 1
Ongoing health talks	1	2	8/8/2010 5 09 PM	CSA	8/8/2010 5 1
RA health talks	1	1	8/8/2010 5 09 PM	CSA	8/8/2010 5 09
Residence bulliten boards	1	1	8/8/2010 5 09 PM	CSA	8/8/2010 5 1
Peers	1	1	8/8/2010 5 09 PM	CSA	8/8/2010 5 1
Parents	1	2	8/8/2010 5 09 PM	CSA	8/8/2010 5 1
Doctors	1	1	8/8/2010 5 09 PM	CSA	8/8/2010 5 1
Teachers	1	1	8/8/2010 5 09 PM	CSA	8/8/2010 5 1
Atractiveness of alternatives	0	0	8/8/2010 5 09 PM	CSA	8/6/2010 7
more personal	1	1	8/8/2010 5 09 PM	CSA	8/8/2010 5 09
more private	1	1	8/8/2010 5 09 PM	CSA	8/8/2010 5 09
more legitimate	1	1	8/8/2010 5 09 PM	CSA	8/8/2010 5 09
trusted relationship	1	2	8/8/2010 5 09 PM	CSA	8/8/2010 5 09

Tree Nodes

Name	Sources	References	Created On	Created	Modified On
RA health talks	1	1	8/8/2010 5 09 PM	CSA	8/8/2010 5 1
more personal	1	1	8/8/2010 5 09 PM	CSA	8/8/2010 5 1
more legitimate	1	1	8/8/2010 5 09 PM	CSA	8/8/2010 5 1
more private	1	1	8/8/2010 5 09 PM	CSA	8/8/2010 5 1
trusted relationship	1	2	8/8/2010 5 09 PM	CSA	8/8/2010 5 1
Actual doctor or nurse	1	3	8/8/2010 5 09 PM	CSA	8/8/2010 5 1
Benefit	1	4	8/8/2010 5 09 PM	CSA	8/8/2010 5 09
health class	1	1	8/8/2010 5 09 PM	CSA	8/8/2010 5 1
Other websites	1	2	8/8/2010 5 09 PM	CSA	8/8/2010 5 1
Peer run education	1	1	8/8/2010 5 09 PM	CSA	8/8/2010 5 1
Benefit	1	4	8/8/2010 5 09 PM	CSA	8/8/2010 5 1
MSB Good CHIS	1	3	8/4/2010 2 32 PM	CSA	8/7/2010 12 48 F
reliable	1	1	8/4/2010 2 33 PM	CSA	8/4/2010 2 :
Private	1	1	8/4/2010 5 55 PM	CSA	8/4/2010 5 :
non-judgemental	1	1	8/4/2010 5 55 PM	CSA	8/4/2010 5 :
MSB Bad CHIS	1	17	8/4/2010 2 33 PM	CSA	8/7/2010 12 48 F
Question reliability	1	4	8/4/2010 2 40 PM	CSA	8/4/2010 7 :
technical difficulties	1	1	8/4/2010 2 51 PM	CSA	8/4/2010 2 :
too general	1	1	8/4/2010 2 55 PM	CSA	8/4/2010 2 :
Quizes too long	1	3	8/4/2010 4 39 PM	CSA	8/4/2010 4 :
Need clearer direction to seek medical atten	1	1	8/4/2010 5 13 PM	CSA	8/4/2010 5 :
Preachy	1	4	8/4/2010 5 45 PM	CSA	8/4/2010 7 :
For Freshmen, not Srs	1	2	8/4/2010 5 47 PM	CSA	8/4/2010 5 :
Outdated info' or methods	1	1	8/4/2010 5 49 PM	CSA	8/4/2010 5 :
MSB Use CHIS	2	37	8/2/2010 10 03 PM	CSA	8/8/2010 9 46 PM
Use Frequency CHIS	2	6	8/2/2010 10 07 PM	CSA	8/4/2010 6 :
Stop at Content CHIS	2	22	8/2/2010 10 11 PM	CSA	8/8/2010 8 49

Tree Nodes

Name	Sources	References	Created On	Created	Modified On
action items	1	2	8/3/2010 5:58 PM	CSA	8/3/2010 5:59
Quizzes	2	2	8/3/2010 6:00 PM	CSA	8/4/2010 6:21
Attractive and interactive	2	5	8/3/2010 6:01 PM	CSA	8/4/2010 6:46
easy navigation	1	2	8/3/2010 6:02 PM	CSA	8/3/2010 6:03
relevent to me	1	3	8/4/2010 6:17 PM	CSA	8/4/2010 6:58
interesting	1	1	8/4/2010 6:40 PM	CSA	8/4/2010 6:41
Stones	1	1	8/4/2010 6:41 PM	CSA	8/4/2010 6:42
Strong taglines	1	1	8/4/2010 6:42 PM	CSA	8/4/2010 6:42
BAC calculator	1	4	8/4/2010 6:44 PM	CSA	8/4/2010 6:45
Leave Content	2	7	8/2/2010 10:12 PM	CSA	8/4/2010 6:56
Used as a peer ed resource	1	1	8/3/2010 5:06 PM	CSA	8/3/2010 5:07
Use Timing CHIS	2	17	8/2/2010 10:09 PM	CSA	8/4/2010 6:
Navigation strategy CHIS	2	8	8/2/2010 10:10 PM	CSA	8/4/2010 6:
1st web then Dr	1	2	8/3/2010 4:56 PM	CSA	8/3/2010 4:57
guided by quizzes	2	2	8/3/2010 5:13 PM	CSA	8/4/2010 6:22
used stuff that pertained to me	2	4	8/3/2010 5:18 PM	CSA	8/4/2010 6:57
used MSB recommendations	1	1	8/3/2010 5:46 PM	CSA	8/3/2010 5:46
30 min too much	2	7	8/3/2010 5:02 PM	CSA	8/4/2010 6:
1st web then Dr	1	2	8/8/2010 9:46 PM	CSA	8/8/2010 9:
guided by quizzes	2	2	8/8/2010 9:46 PM	CSA	8/8/2010 9:
used stuff that pertained to me	2	4	8/8/2010 9:46 PM	CSA	8/8/2010 9:
used MSB recommendations	1	1	8/8/2010 9:46 PM	CSA	8/8/2010 9:
Stop at Content CHIS	2	22	8/8/2010 9:46 PM	CSA	8/8/2010 9:
action items	1	2	8/8/2010 9:46 PM	CSA	8/8/2010 9:46
Quizzes	2	2	8/8/2010 9:46 PM	CSA	8/8/2010 9:46
Attractive and interactive	2	5	8/8/2010 9:46 PM	CSA	8/8/2010 9:46
easy navigation	1	2	8/8/2010 9:46 PM	CSA	8/8/2010 9:46
relevent to me	1	3	8/8/2010 9:46 PM	CSA	8/8/2010 9:46

Tree Nodes

Name	Sources	References	Created On	Created	Modified On
interesting	1	1	8/8/2010 9:46 PM	CSA	8/8/2010 9:46
Stories	1	1	8/8/2010 9:46 PM	CSA	8/8/2010 9:46
Strong taglines	1	1	8/8/2010 9:46 PM	CSA	8/8/2010 9:46
BAC calculator	1	4	8/8/2010 9:46 PM	CSA	8/8/2010 9:46
Leave Content	2	7	8/8/2010 9:46 PM	CSA	8/8/2010 9:46
Used as a peer ed resource	1	1	8/8/2010 9:46 PM	CSA	8/8/2010 9:46
Predicted Use XCHIS	0	0	8/2/2010 10:21 PM	CSA	8/4/2010 2:33 PM
eHealth info seeking frequency XCHIS	1	1	8/2/2010 10:24 PM	CSA	8/5/2010 5:46
According to present need	1	2	8/6/2010 7:28 AM	CSA	8/6/2010 7:31
1st need to know more about it	1	1	8/6/2010 7:28 AM	CSA	8/6/2010 7:29
If it were introduced by college	1	1	8/6/2010 7:29 AM	CSA	8/6/2010 7:31
WebInfo Timing XCHIS	0	0	8/2/2010 10:27 PM	CSA	8/2/2010 10:27
Stop at Content XCHIS	1	1	8/2/2010 10:29 PM	CSA	8/5/2010 6:42
Nutrition info	1	3	8/5/2010 6:23 PM	CSA	8/5/2010 6:27
something that jumps out	1	1	8/5/2010 6:25 PM	CSA	8/5/2010 6:25
fun fact	1	1	8/5/2010 6:26 PM	CSA	8/5/2010 6:26
relevant to me	2	3	8/5/2010 6:27 PM	CSA	8/6/2010 8:01
Quick link to age and class sp	1	1	8/5/2010 6:28 PM	CSA	8/5/2010 6:29
easy access	1	1	8/5/2010 6:29 PM	CSA	8/5/2010 6:29
Good graphics	2	4	8/5/2010 6:35 PM	CSA	8/6/2010 8:00
not textbook-like	1	2	8/5/2010 6:36 PM	CSA	8/5/2010 6:37 PM
Clear & concise	1	1	8/6/2010 7:46 AM	CSA	8/6/2010 7:46
without sales pitch	1	1	8/6/2010 7:46 AM	CSA	8/6/2010 7:47 AM
no adware or pop-ups	1	1	8/6/2010 7:51 AM	CSA	8/6/2010 7:52 AM
well organized	1	2	8/6/2010 7:54 AM	CSA	8/6/2010 8:02
Q&A segments	1	1	8/6/2010 7:59 AM	CSA	8/6/2010 7:59

Tree Nodes

Name	Sources	References	Created On	Created	Modified On
Good info	1	1	8/6/2010 8 01 AM	CSA	8/6/2010 8 01
About us section	1	1	8/6/2010 8 03 AM	CSA	8/6/2010 8 03
Leave Content XCHIS	0	0	8/2/2010 10 30 PM	CSA	8/2/2010 10 3
Too complicated	1	1	8/5/2010 6 34 PM	CSA	8/5/2010 6 34
text dense	1	1	8/6/2010 7 55 AM	CSA	8/6/2010 7 55 AM
Cliche's	1	1	8/5/2010 6 40 PM	CSA	8/5/2010 6 40
Sales pitch	2	3	8/5/2010 6 42 PM	CSA	8/6/2010 7 52
ask for email	1	1	8/6/2010 7 50 AM	CSA	8/6/2010 7 50
adware & pop-ups	1	1	8/6/2010 7 52 AM	CSA	8/6/2010 7 52
absurd info'	1	1	8/6/2010 8 04 AM	CSA	8/6/2010 8 05
Bias info'	1	1	8/6/2010 8 06 AM	CSA	8/6/2010 8 06
type-o's	1	1	8/6/2010 8 08 AM	CSA	8/6/2010 8 08
cheap layout	1	1	8/6/2010 8 09 AM	CSA	8/6/2010 8 09
When I need it	1	3	8/5/2010 6 21 PM	CSA	8/5/2010 6 22
web surf strategies	1	3	8/6/2010 7 41 AM	CSA	8/6/2010 7 4
I'm gonna check it out	1	1	8/6/2010 10 45 AM	CSA	8/6/2010 10
Liked Most CHIS	2	31	8/2/2010 10 14 PM	CSA	8/7/2010 12 53 F
Good alcohol info resources	1	1	8/3/2010 5 05 PM	CSA	8/3/2010 5 1
Liked the Quizzes	2	5	8/3/2010 5 16 PM	CSA	8/4/2010 7 1
MSB tools	2	8	8/3/2010 5 52 PM	CSA	8/4/2010 6 1
most facts less stories	1	2	8/3/2010 5 56 PM	CSA	8/3/2010 6
New learning	2	4	8/3/2010 6 04 PM	CSA	8/4/2010 6 4
User friendliness	1	1	8/3/2010 6 06 PM	CSA	8/3/2010 6 1
Prescription drug info'	1	1	8/3/2010 6 13 PM	CSA	8/3/2010 6
cafeine section	1	1	8/3/2010 6 17 PM	CSA	8/3/2010 6
parent section	1	2	8/3/2010 7 27 PM	CSA	8/3/2010 7 1
Drug module	1	4	8/4/2010 6 29 PM	CSA	8/4/2010 6 1

Tree Nodes

	Name	Sources	References	Created On	Created	Modified On
	Functional information	1	3	8/4/2010 6:48 PM	CSA	8/4/2010 6:
	Personalized by surveys	1	2	8/4/2010 6:52 PM	CSA	8/4/2010 6!
	Nutrition	1	1	8/4/2010 7:00 PM	CSA	8/4/2010 7!
	Breadth of info	1	2	8/4/2010 7:02 PM	CSA	8/4/2010 7!
	Visualizers	1	2	8/4/2010 7:34 PM	CSA	8/4/2010 7:
☐	Liked Least CHIS	2	19	8/2/2010 10:17 PM	CSA	8/7/2010 12:53 F
	Student stories	1	5	8/3/2010 5:51 PM	CSA	8/3/2010 6!
	too wordy	1	1	8/3/2010 6:11 PM	CSA	8/3/2010 6
	unclear drug module included Rx drugs	1	2	8/3/2010 6:18 PM	CSA	8/3/2010 6
	not enough content change	1	1	8/3/2010 6:59 PM	CSA	8/3/2010 6!
	Tobacco was random	1	1	8/3/2010 7:03 PM	CSA	8/3/2010 7!
	Question too female oriented	1	1	8/3/2010 7:29 PM	CSA	8/3/2010 7:
	Quizzes	1	3	8/4/2010 4:41 PM	CSA	8/4/2010 4:
	narrow American focus	1	2	8/4/2010 7:06 PM	CSA	8/4/2010 7!
	abstinence	1	1	8/4/2010 7:07 PM	CSA	8/4/2010 7!
	Stress module needs work	1	2	8/4/2010 7:35 PM	CSA	8/4/2010 7:
☐	MSB Influence Behavior CHIS	2	35	8/2/2010 10:32 PM	CSA	8/8/2010 9:46 PM
☐	If so How	2	19	8/2/2010 10:35 PM	CSA	8/7/2010 12
	personal control and choice	1	3	8/3/2010 6:27 PM	CSA	8/3/2010 6:42
	avoid adult judgement	1	3	8/3/2010 6:26 PM	CSA	8/3/2010 6:28
	can decrease stress	1	1	8/3/2010 6:35 PM	CSA	8/3/2010 6:35
	filtered through peers	2	4	8/3/2010 6:32 PM	CSA	8/4/2010 7:25
	confidentiality	1	1	8/3/2010 6:25 PM	CSA	8/3/2010 6:25
	By getting the info out there	2	3	8/3/2010 6:46 PM	CSA	8/4/2010 7:13
	Increasing understanding	0	0	8/3/2010 6:47 PM	CSA	8/3/2010 6:47
	prevention	1	2	8/4/2010 5:43 PM	CSA	8/4/2010 5:44
	avoid friend's judgement	1	1	8/4/2010 5:56 PM	CSA	8/4/2010 5:57
	help friend's risky behavior	1	2	8/4/2010 7:25 PM	CSA	8/4/2010 7:26

Tree Nodes

Name	Sources	References	Created On	Created	Modified On
nutrition	1	2	8/4/2010 7 30 PM	CSA	8/4/2010 7 31
[-] If not Why	2	7	8/2/2010 10 35 PM	CSA	8/7/2010 12
conflicted	2	2	8/3/2010 6 40 PM	CSA	8/4/2010 7 15
[-] Affect certain behaviors more CHIS	1	10	8/2/2010 10 44 PM	CSA	8/7/2010 12
help less stigmatized behaviors	1	5	8/3/2010 6 44 PM	CSA	8/3/2010 6 51
Sexual health	1	2	8/3/2010 6 48 PM	CSA	8/3/2010 6 52
Stress	1	3	8/3/2010 6 50 PM	CSA	8/3/2010 6 51
Nutrition	1	2	8/3/2010 6 50 PM	CSA	8/3/2010 6 51
alcohol	1	1	8/3/2010 6 53 PM	CSA	8/3/2010 6 53
help less stigmatized behaviors	1	5	8/8/2010 9 46 PM	CSA	8/8/2010 9 .
Sexual health	1	2	8/8/2010 9 46 PM	CSA	8/8/2010 9 .
Stress	1	3	8/8/2010 9 46 PM	CSA	8/8/2010 9 .
Nutrition	2	4	8/8/2010 9 46 PM	CSA	8/8/2010 9 .
alcohol	1	1	8/8/2010 9 46 PM	CSA	8/8/2010 9 .
conflicted	2	2	8/8/2010 9 46 PM	CSA	8/8/2010 9 .
confidentiality	1	1	8/8/2010 9 46 PM	CSA	8/8/2010 9 .
avoid adult judgement	1	3	8/8/2010 9 46 PM	CSA	8/8/2010 9 .
personal control and choice	1	3	8/8/2010 9 46 PM	CSA	8/8/2010 9 .
filtered through peers	2	4	8/8/2010 9 46 PM	CSA	8/8/2010 9 .
can decrease stress	1	1	8/8/2010 9 46 PM	CSA	8/8/2010 9 .
By getting the info out there	2	3	8/8/2010 9 46 PM	CSA	8/8/2010 9 .
Increasing understanding	0	0	8/8/2010 9 46 PM	CSA	8/3/2010 6 .
prevention	1	2	8/8/2010 9 46 PM	CSA	8/8/2010 9 .
avoid friend's judgement	1	1	8/8/2010 9 46 PM	CSA	8/8/2010 9 .
help friend's risky behavior	1	2	8/8/2010 9 46 PM	CSA	8/8/2010 9 .
[-] Change Recommendations CHIS	2	101	8/2/2010 10 50 PM	CSA	8/7/2010 12 57 F
[-] Popular features to add CHIS	2	62	8/2/2010 10 52 PM	CSA	8/7/2010 12

Tree Nodes

Name	Sources	References	Created On	Created	Modified On
☞ 🗨️ Treasure hunt Unlock new info	1	9	8/3/2010 6 54 PM	CSA	8/3/2010 6 56
☞ 🗨️ Changing hot topics	1	6	8/3/2010 6 57 PM	CSA	8/3/2010 6 58
☞ 🗨️ social networking	2	8	8/3/2010 7 07 PM	CSA	8/4/2010 7 43
☞ 🗨️ Email the expert	2	4	8/3/2010 7 08 PM	CSA	8/4/2010 7 46
☞ 🗨️ Dear Abby-like section	1	6	8/3/2010 7 09 PM	CSA	8/3/2010 7 11
☞ 🗨️ Action items	2	6	8/3/2010 7 13 PM	CSA	8/4/2010 4 51
☞ 🗨️ Pop-ups	2	12	8/3/2010 7 15 PM	CSA	8/4/2010 7 55
☞ 🗨️ Fun facts	1	6	8/3/2010 7 17 PM	CSA	8/3/2010 7 22
☞ 🗨️ chat room	1	1	8/4/2010 7 43 PM	CSA	8/4/2010 7 43
☞ 🗨️ needs monitoring	1	2	8/4/2010 7 44 PM	CSA	8/4/2010 7 45
☞ 🗨️ Article comment section	1	1	8/4/2010 7 45 PM	CSA	8/4/2010 7 45
☞ 🗨️ Email reminders	1	1	8/4/2010 7 46 PM	CSA	8/4/2010 7 46
☞ 🗨️ controversial topics with comm	1	5	8/4/2010 7 47 PM	CSA	8/4/2010 7 49
☞ 🗨️ News feed	1	1	8/4/2010 7 51 PM	CSA	8/4/2010 7 52
☞ 🗨️ needs monitoring	1	2	8/7/2010 12 55 PM	CSA	8/7/2010 12 5
☞ 🗨️ more quizzes	1	2	8/3/2010 7 01 PM	CSA	8/3/2010 7 1
☞ 🗨️ Question too female oriented	1	6	8/3/2010 7 30 PM	CSA	8/3/2010 7 3
☞ 🗨️ Gender oriented skins or strate	1	6	8/3/2010 7 31 PM	CSA	8/3/2010 7 34
☞ 🗨️ Cite info` sources	1	1	8/4/2010 2 37 PM	CSA	8/4/2010 2 3
☞ 🗨️ give links	1	1	8/4/2010 5 53 PM	CSA	8/4/2010 5 53
☞ 🗨️ drill down for more	1	3	8/4/2010 4 36 PM	CSA	8/4/2010 7 3
☞ 🗨️ shorten quiz format and language	1	1	8/4/2010 4 37 PM	CSA	8/4/2010 4 3
☞ 🗨️ General preferences	0	0	8/4/2010 4 46 PM	CSA	8/4/2010 4 4
☞ 🗨️ less wordy	1	2	8/4/2010 4 46 PM	CSA	8/4/2010 4 55
☞ 🗨️ Window shading headlines	1	1	8/4/2010 4 58 PM	CSA	8/4/2010 4 59
☞ 🗨️ more visual	1	3	8/4/2010 4 47 PM	CSA	8/4/2010 4 56

Tree Nodes

Name	Sources	References	Created On	Created	Modified On
Update info' more frequently	1	1	8/4/2010 7 52 PM	CSA	8/4/2010 7 53
Bulleted content	1	1	8/4/2010 4 55 PM	CSA	8/4/2010 4 :
Be more directive	1	2	8/4/2010 5 16 PM	CSA	8/4/2010 7 :
More nutrition info'	1	3	8/4/2010 6 24 PM	CSA	8/4/2010 7 :
Build adding more info' weekly	1	1	8/4/2010 6 26 PM	CSA	8/4/2010 6 :
Don't preach	1	1	8/4/2010 6 50 PM	CSA	8/4/2010 6 !
Health reflect Wheaton stats	1	1	8/4/2010 7 08 PM	CSA	8/4/2010 7 1
links to making healthy campus meals	1	7	8/4/2010 7 31 PM	CSA	8/4/2010 7 :
get email prompts	1	1	8/4/2010 7 40 PM	CSA	8/4/2010 7 4
change up the main page sometime	1	1	8/4/2010 7 49 PM	CSA	8/4/2010 7 !
<input checked="" type="checkbox"/> Raise the level to college	1	2	8/4/2010 7 56 PM	CSA	8/4/2010 7 !
speak to us as adults	1	2	8/4/2010 7 57 PM	CSA	8/4/2010 7 58
Offer dissenting views	1	1	8/4/2010 7 59 PM	CSA	8/4/2010 7 !
Add a money management section	1	3	8/4/2010 8 00 PM	CSA	8/4/2010 8 1
speak to us as adults	1	2	8/7/2010 12 57 PM	CSA	8/7/2010 12
<input checked="" type="checkbox"/> less wordy	1	2	8/7/2010 12 57 PM	CSA	8/7/2010 12
Window shading headlines	1	1	8/7/2010 12 57 PM	CSA	8/7/2010 12 5
more visual	1	3	8/7/2010 12 57 PM	CSA	8/7/2010 12
Update info' more frequently	1	1	8/7/2010 12 57 PM	CSA	8/7/2010 12
give links	1	1	8/7/2010 12 57 PM	CSA	8/7/2010 12
Gender oriented skins or strategies	1	6	8/7/2010 12 57 PM	CSA	8/7/2010 12
Treasure hunt Unlock new info	1	9	8/7/2010 12 57 PM	CSA	8/7/2010 12
Changing hot topics	1	6	8/7/2010 12 57 PM	CSA	8/7/2010 12
social networking	2	8	8/7/2010 12 57 PM	CSA	8/7/2010 12
Email the expert	2	4	8/7/2010 12 57 PM	CSA	8/7/2010 12
Dear Abby-like section	1	6	8/7/2010 12 57 PM	CSA	8/7/2010 12
Action items	2	6	8/7/2010 12 57 PM	CSA	8/7/2010 12
Pop-ups	2	12	8/7/2010 12 57 PM	CSA	8/7/2010 12

Tree Nodes

Name	Sources	References	Created On	Created	Modified On
Fun facts	1	6	8/7/2010 12 57 PM	CSA	8/7/2010 12
chat room	1	1	8/7/2010 12 57 PM	CSA	8/7/2010 12
needs monitoring	1	2	8/7/2010 12 57 PM	CSA	8/7/2010 12 5
Article comment section	1	1	8/7/2010 12 57 PM	CSA	8/7/2010 12
Email reminders	1	1	8/7/2010 12 57 PM	CSA	8/7/2010 12
controversial topics with comment section	1	5	8/7/2010 12 57 PM	CSA	8/7/2010 12
News feed	1	1	8/7/2010 12 57 PM	CSA	8/7/2010 12
needs monitoring	1	2	8/7/2010 12 57 PM	CSA	8/7/2010 12
MSB Influence Behavior XCHIS	0	0	8/2/2010 10 40 PM	CSA	8/4/2010 2 33 PM
If so How XCHIS	2	29	8/2/2010 10 48 PM	CSA	8/7/2010 12
skill training	1	1	8/5/2010 7 00 PM	CSA	8/5/2010 7 00
Need Wheaton-specifics	2	3	8/5/2010 7 01 PM	CSA	8/6/2010 8 39
after the fact resource	1	2	8/5/2010 7 04 PM	CSA	8/5/2010 7 21
reflect MSB campus-wide	1	2	8/5/2010 7 08 PM	CSA	8/5/2010 7 09
Uniformly used multi-departme	1	3	8/5/2010 7 11 PM	CSA	8/5/2010 7 15
Because it's student-specific	1	1	8/5/2010 7 22 PM	CSA	8/5/2010 7 23
not preach	1	1	8/5/2010 7 23 PM	CSA	8/5/2010 7 23
If you're open-minded	1	2	8/6/2010 8 12 AM	CSA	8/6/2010 8 16
At early stages	1	1	8/6/2010 8 14 AM	CSA	8/6/2010 8 15
over time	1	1	8/6/2010 8 18 AM	CSA	8/6/2010 8 20
different, sticky messaging	1	2	8/6/2010 8 21 AM	CSA	8/6/2010 8 22
Convincing	1	1	8/6/2010 8 24 AM	CSA	8/6/2010 8 24
Safety tips	1	1	8/6/2010 8 28 AM	CSA	8/6/2010 8 28
Video's powerful	1	3	8/6/2010 8 32 AM	CSA	8/6/2010 8 35
use student voices	1	3	8/6/2010 8 33 AM	CSA	8/6/2010 8 38
offer opposing views	1	3	8/6/2010 8 44 AM	CSA	8/6/2010 8 46
Help athletes	1	2	8/6/2010 10 43 AM	CSA	8/6/2010 10 4

Tree Nodes

Name	Sources	References	Created On	Created	Modified On
use student voices	1	3	8/7/2010 12:58 PM	CSA	8/7/2010 12:5
[-] If not Why XCHIS	3	10	8/2/2010 10:48 PM	CSA	8/7/2010 12
Maybe Help stop and think	1	1	8/3/2010 6:30 PM	CSA	8/3/2010 6:31
real students don't do websites	1	1	8/5/2010 7:03 PM	CSA	8/5/2010 7:03
people just Google it	1	1	8/5/2010 7:10 PM	CSA	8/5/2010 7:10
hard to change habits	1	6	8/6/2010 8:15 AM	CSA	8/6/2010 8:30
Unsure	1	1	8/6/2010 8:25 AM	CSA	8/6/2010 8:26
[-] Affect certain behaviors XCHIS	1	3	8/2/2010 10:49 PM	CSA	8/6/2010 8
[-] Yes	2	17	8/6/2010 8:48 AM	CSA	8/7/2010 12:5
Stigma-free topics	1	2	8/5/2010 7:17 PM	CSA	8/5/2010 7:19
Stress	1	3	8/5/2010 7:16 PM	CSA	8/5/2010 7:19
Inform Not stop behaviors	1	2	8/6/2010 8:51 AM	CSA	8/6/2010 8:52
Key for freshmen	1	5	8/6/2010 9:00 AM	CSA	8/6/2010 9:05
Add to inside/wheaton	1	5	8/6/2010 9:05 AM	CSA	8/6/2010 9:07
No emails	1	2	8/6/2010 9:08 AM	CSA	8/6/2010 9:10
Wheaton Digest	1	1	8/6/2010 9:10 AM	CSA	8/6/2010 9:10
Highlight in Orientation	1	1	8/6/2010 9:11 AM	CSA	8/6/2010 9:12
[-] No	1	5	8/6/2010 8:49 AM	CSA	8/7/2010 12:5
set in their ways	1	1	8/6/2010 8:49 AM	CSA	8/6/2010 8:49
experimenting	1	1	8/6/2010 8:50 AM	CSA	8/6/2010 8:50
we're invincible	1	3	8/6/2010 8:55 AM	CSA	8/6/2010 8:59
content dependent	1	1	8/5/2010 6:58 PM	CSA	8/5/2010 6:
[-] Ideal Health Web Features XCHI	2	46	8/2/2010 10:53 PM	CSA	8/7/2010 1:00 PM
[-] Popular Feature to Add XCHIS	2	33	8/2/2010 10:55 PM	CSA	8/7/2010 1:1
Twitter health	1	1	8/5/2010 7:24 PM	CSA	8/5/2010 7:24
post comments	1	1	8/5/2010 7:25 PM	CSA	8/5/2010 7:25

Tree Nodes

Name	Sources	References	Created On	Created	Modified On
interest specific notifications	1	1	8/5/2010 7 27 PM	CSA	8/5/2010 7 27
RRS feed	2	2	8/5/2010 7 28 PM	CSA	8/6/2010 10 3
Interest recommendations (Qui	1	1	8/5/2010 7 29 PM	CSA	8/5/2010 7 30
Facebook links	1	3	8/5/2010 7 32 PM	CSA	8/5/2010 7 36
must be care of sensitive con	1	1	8/5/2010 7 33 PM	CSA	8/5/2010 7 33
Connect MSB to inside/wheato	2	2	8/5/2010 7 37 PM	CSA	8/6/2010 10 3
Privacy worries	1	1	8/5/2010 7 39 PM	CSA	8/5/2010 7 40
need easier access	1	1	8/5/2010 7 41 PM	CSA	8/5/2010 7 41
chat room	1	7	8/6/2010 9 13 AM	CSA	8/6/2010 9 23
FML	1	3	8/6/2010 9 21 AM	CSA	8/6/2010 9 23
Links to direct support	1	2	8/6/2010 9 15 AM	CSA	8/6/2010 9 17
fearful	1	2	8/6/2010 9 17 AM	CSA	8/6/2010 9 19
Student Q & A	1	2	8/6/2010 9 19 AM	CSA	8/6/2010 9 20
Rate it	1	2	8/6/2010 9 24 AM	CSA	8/6/2010 9 25
Ask the expert	1	6	8/6/2010 9 27 AM	CSA	8/6/2010 10 3
email updates	1	2	8/6/2010 10 33 AM	CSA	8/6/2010 10 3
easy links	1	3	8/6/2010 10 39 AM	CSA	8/6/2010 10 4
ex Erowid	1	1	8/6/2010 10 41 AM	CSA	8/6/2010 10 4
ex Erowid	1	1	8/7/2010 1 00 PM	CSA	8/7/2010 1 00
fearful	1	2	8/7/2010 1 00 PM	CSA	8/7/2010 1 00
FML	1	3	8/7/2010 1 00 PM	CSA	8/7/2010 1 00
Privacy worries	1	1	8/7/2010 1 00 PM	CSA	8/7/2010 1 00
need easier access	1	1	8/7/2010 1 00 PM	CSA	8/7/2010 1 00
must be care of sensitive cont	1	1	8/7/2010 1 00 PM	CSA	8/7/2010 1 00
concise	1	1	8/5/2010 6 18 PM	CSA	8/6/2010 10
easy access	1	2	8/5/2010 6 29 PM	CSA	8/5/2010 6 :

Tree Nodes

Name	Sources	References	Created On	Created	Modified On
Quick facts	2	3	8/5/2010 6 30 PM	CSA	8/6/2010 10
add some funny	1	1	8/5/2010 6 32 PM	CSA	8/5/2010 6 :
pictures	1	2	8/5/2010 6 32 PM	CSA	8/5/2010 6 :
clear language	1	1	8/5/2010 6 45 PM	CSA	8/5/2010 6 :
Legitimizing label	1	2	8/5/2010 6 48 PM	CSA	8/5/2010 6 :
Frequent updates	1	1	8/6/2010 10 35 AM	CSA	8/6/2010 10
Twitter health	1	1	8/7/2010 1 00 PM	CSA	8/7/2010 1 1
post comments	1	1	8/7/2010 1 00 PM	CSA	8/7/2010 1 1
interest specific notifications	1	1	8/7/2010 1 00 PM	CSA	8/7/2010 1 1
RRS feed	2	2	8/7/2010 1 00 PM	CSA	8/7/2010 1 1
Interest recommendations (Quiz-recom exp	1	1	8/7/2010 1 00 PM	CSA	8/7/2010 1 1
Facebook links	1	3	8/7/2010 1 00 PM	CSA	8/7/2010 1 1
must be care of sensative cont	1	1	8/7/2010 1 00 PM	CSA	8/7/2010 1 00
Connect MSB to insideWheaton	2	2	8/7/2010 1 00 PM	CSA	8/7/2010 1 1
Privacy worries	1	1	8/7/2010 1 00 PM	CSA	8/7/2010 1 00
need easier access	1	1	8/7/2010 1 00 PM	CSA	8/7/2010 1 00
chat room	1	7	8/7/2010 1 00 PM	CSA	8/7/2010 1 1
FML	1	3	8/7/2010 1 00 PM	CSA	8/7/2010 1 00
Links to direct support	1	2	8/7/2010 1 00 PM	CSA	8/7/2010 1 1
fearful	1	2	8/7/2010 1 00 PM	CSA	8/7/2010 1 00
Student Q & A	1	2	8/7/2010 1 00 PM	CSA	8/7/2010 1 1
Rate it	1	2	8/7/2010 1 00 PM	CSA	8/7/2010 1 1
Ask the expert	1	6	8/7/2010 1 00 PM	CSA	8/7/2010 1 1
email updates	1	2	8/7/2010 1 00 PM	CSA	8/7/2010 1 1
easy links	1	3	8/7/2010 1 00 PM	CSA	8/7/2010 1 1
ex Erowid	1	1	8/7/2010 1 00 PM	CSA	8/7/2010 1 00

Tree Nodes

Name	Sources	References	Created On	Created	Modified On
ex Erowid	1	1	8/7/2010 1 00 PM	CSA	8/7/2010 1 1
fearful	1	2	8/7/2010 1 00 PM	CSA	8/7/2010 1 1
FML	1	3	8/7/2010 1 00 PM	CSA	8/7/2010 1 1
need easier access	1	1	8/7/2010 1 00 PM	CSA	8/7/2010 1 1
Privacy worries	1	1	8/7/2010 1 00 PM	CSA	8/7/2010 1 1
must be care of sensative content	1	1	8/7/2010 1 00 PM	CSA	8/7/2010 1 1
Other thoughts CHIS	0	0	8/2/2010 10 57 PM	CSA	8/4/2010 2 33 PM
Other thought XCHIS	0	0	8/2/2010 10 57 PM	CSA	8/4/2010 2 33 PM
Other websites	0	0	8/4/2010 5 51 PM	CSA	8/4/2010 5 51 PM
Ways to promote MSB	1	2	8/5/2010 5 48 PM	CSA	8/5/2010 5 49 PM
First Impressions XCHIS	2	11	8/5/2010 6 46 PM	CSA	8/7/2010 1 01 PM
Attractive	1	5	8/6/2010 7 25 AM	CSA	8/6/2010 7 :
nonjudgemental	1	1	8/6/2010 7 33 AM	CSA	8/6/2010 7 :
For us	1	3	8/6/2010 7 35 AM	CSA	8/6/2010 7 :
Seems easy to use	1	1	8/6/2010 7 37 AM	CSA	8/6/2010 7 :

Non-Hierarchical Free Node Categories

Free Nodes

Name	Sources	References	Created On	Created By	Modified On
Ways to promote MSB	1	1	8/5/2010 5:48 PM	CSA	8/5/2010 5:48
Want MSB access before and after college	2	5	8/3/2010 7:23 PM	CSA	8/4/2010 5:09
want health talks year-round	1	2	8/5/2010 5:21 PM	CSA	8/5/2010 5:21
Use with class or sm groups	1	1	8/4/2010 6:01 PM	CSA	8/4/2010 6:01
Tobacco random	1	5	8/3/2010 7:04 PM	CSA	8/3/2010 7:06
Study limitation	1	4	8/3/2010 5:08 PM	CSA	8/3/2010 6:08
Strongly highlight school resources	1	1	8/4/2010 6:07 PM	CSA	8/4/2010 6:07
School should do more	1	2	8/3/2010 4:48 PM	CSA	8/3/2010 6:42
reflect MSB info on campus	1	1	8/4/2010 7:10 PM	CSA	8/4/2010 7:10
RA	1	7	8/5/2010 5:27 PM	CSA	8/5/2010 5:43
Questioning Inflexion & info' sources	1	1	8/4/2010 2:36 PM	CSA	8/4/2010 2:36
Not getting sex ed in high school	1	1	8/3/2010 6:49 PM	CSA	8/3/2010 6:49
NMC	3	3	8/3/2010 4:43 PM	CSA	8/5/2010 5:52
Need to operationalize emergency contact stuff	1	2	8/3/2010 7:12 PM	CSA	8/3/2010 7:12
Need proactive doctors	1	2	8/3/2010 4:46 PM	CSA	8/3/2010 6:42
need nutritional encouragement	1	5	8/3/2010 7:19 PM	CSA	8/3/2010 7:21
need more info' about prescription drug interact	1	1	8/3/2010 6:16 PM	CSA	8/3/2010 6:16
narrow American focus	1	1	8/4/2010 7:04 PM	CSA	8/4/2010 7:04
Info' overload at Orientation	1	1	8/5/2010 5:23 PM	CSA	8/5/2010 5:23
hotline	1	3	8/4/2010 6:02 PM	CSA	8/4/2010 6:08
hookah	1	1	8/4/2010 7:23 PM	CSA	8/4/2010 7:23
Hold Ask the expert chat sessions	1	1	8/6/2010 10:31 AM	CSA	8/6/2010 10:31
emails helpful reminders	1	1	8/4/2010 6:39 PM	CSA	8/4/2010 6:39
connect to academics	1	1	8/4/2010 6:19 PM	CSA	8/4/2010 6:19
admitted subject bias	1	1	8/4/2010 6:28 PM	CSA	8/4/2010 6:28

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Curriculum Vitae

CRAIG STEVEN ANDRADE
Wheaton College, Norton, MA
candrade@wheatonma.edu
Office: 508.286.8210

PERSONAL

Born: 1960

EDUCATION

2011

BOSTON UNIVERSITY, Boston, MA
Doctorate of Public Health Program

2006

BOSTON UNIVERSITY, Boston, MA
Master of Public Health

1993

BRIDGEWATER STATE COLLEGE, Bridgewater, MA
Bachelor of Science in Physical Education
Concentration in Athletic Training/Sports Medicine
Cum Laude

1985

MASSASOIT COMMUNITY COLLEGE, Brockton, MA
Associate in Nursing Science

EXPERIENCE

2005-Present

WHEATON COLLEGE, Norton, MA
Associate Dean of Health & Wellness/ Director of Student Health Services

- Manage student health service provision in collaboration with contracted service providers
- Supervise professional and student staff
- Oversee student health insurance provision
- Develop and implement strategic plan for continuous systems assessment and improvement
- Develop and manage eating disorder protocol and core care team
- Create and implement health promotion curricula, programs and web-based health education content
- Manage campus fitness center and related programming
- Develop and supervise Peer Health Advocates program
- Create and direct annual Wheaton Wellness Day
- Co-chair emergency preparedness committee
- Direct Healthy Campus: 2014 initiative
- Administer and analyze bi-annual National College Health Assessment

- Evaluate measures for student health risk behaviors, health literacy and resilience to direct and assess intervention strategies and outcome change

BUCKINGHAM BROWNE & NICHOLS SCHOOL Cambridge, MA

1997-2005

Head Athletic Trainer

- Design and implement tri-campus sports medicine program
- Supervise high school and college interns and professional staff
- Manage athletic training facilities

1998-2003

Middle and Upper School Nurse

- Develop and implement daily nursing services to the high school and middle school community
- Managing student health records

2001-2003

School Nurse Manager

Design, supervision, and implement environmental safety, school and camp nursing services for Lower, Middle, and Upper School campuses

2001-2003

BB&N Committees

Health Education Curriculum Development Committee, member

Research and design of comprehensive health curriculum for pre-kindergarten through 12 grades

2002-2005

Operations Committee, member

Address design and management of school infrastructure issues including logistical planning, parking, transportation, postal services, and operational budgets

1998- 2005

Emergency Crisis Team, member

- Assist in emergency plan development and student and faculty training
- First responder for campus disaster, school violence, and community trauma such as suicide.

1998-2005

Sexual Harassment, Student Advocate

Provide student support in cases of sexual harassment issues.

1998-2005

Student Support Group

Act as professional consultation in a team setting, providing assessment and counseling in student academic, health, and disciplinary affairs.

- 1985-1997 **BOSTON CITY HOSPITAL/Boston Medical Center,**
Boston, MA
Oncology Nurse (1995-1997)
Perform specialized cancer nursing services included in the delivery of adult oncology care.
- Staff Nurse** (1985-1987, 1991-1995)
Provide general nursing services included in the delivery of adult nursing care
- Intensive Care Nurse** (1989-1991)
Provide specialized cardiology, respiratory, surgical intensive nursing services included in adult acute care.
- Public Health Nurse,** Tuberculosis (TB) Division (1987-1989)
Management, counsel, and education of TB cases with AIDS, positive HIV status and those at risk for HIV exposure
- 1994 **BRIDGEWATER STATE COLLEGE, Bridgewater, MA**
Acting Head Athletic Trainer
- Implement athletic training program
 - Supervise student athletic trainers and professional staff
 - Manage athletic training facilities
- 1995 - 2005 **ACTIVE HEALTH, Brockton, MA**
Owner/ Therapist
Health and fitness company providing sports medicine, fitness training, and massage therapy to elite through beginning athletes and performing artists
- 1994-1996 **MUSCULAR THERAPY INSTITUTE, Cambridge, MA**
Faculty Member
Provide instruction in massage and related studies to students in the classroom and on an individual basis.
Adjunct Faculty (1991-1992)
- 1993 -1996 **BRAINTREE HOSPITAL, Braintree, MA**
CENTER FOR ALTERNATIVE THERAPIES,
Staff Therapist
Provide sports therapy and massage therapy services to inpatient and outpatient population.
- 1987-1995 **PRIVATE PRACTICE, Cambridge and Brockton, MA**
Massage Therapist
Treatment of muscular tension and resulting conditions through the use of massage, education, and exercise counsel.

1994 – Present

Guest Lecturer

Provide workshops, instruction, and training in nursing, sports medicine, massage, conditioning, nutrition and related subjects.
BRIDGEWATER STATE COLLEGE
MASSASOIT COMMUNITY COLLEGE
STONEHILL COLLEGE
NORTHEASTERN UNIVERSITY
BROCKTON HIGH SCHOOL
BRAINTREE HOSPITAL
MUSCULAR THERAPY INSTITUTE

2001

WCVB-TV CHANNEL 5 TELEVISION, Needham, MA

Television Fitness Consultant

Provide on air exercise instruction and demonstration for the general public

RELATED EXPERIENCE

1991 - Present

Certified Strength and Conditioning Specialist

Provide sports medicine, conditioning, and massage therapy for novice to elite athletes including 1991 winner of the Race Across America (RAAM), professional boxers, Olympic figure skaters, Olympic lugers, world class runners and triathletes.

1995 - 2002

**WELLBRIDGE FITNESS CENTERS,
Needham and Cambridge, MA**

Personal Fitness Trainer

Provide one-on-one instruction in general fitness and sports specific Conditioning for Club members

Group Spinning Instructor, (2000 – 2002)

1989-1990

AIDS ACTION COMMITTEE

Wellness Center Staff

Provide volunteer massage therapy services to people with AIDS at the Center, in hospitals, and in their homes.

1996

ATLANTA OLYMPICS

Medical Staff Member

Provided athletic training, nursing, and massage therapy services to the world's Olympic boxing athletes before and during the 1996 Olympic competition in Atlanta, Georgia.

PRESENTATIONS

2011 *Promoting e-Health: What Students Recommend*
NASPA Annual Conference, Phoenix, AZ, 4/14/11

LICENSES

1985-Present Registered Nurse, Massachusetts License: #173061

1993-Present Licensed Athletic Trainer, Massachusetts License: #665

CERTIFICATES

2001 USA Weightlifting, Colorado Springs, CO
Club Coach, Certificate

1998 National Strength and Conditioning Association
Strength and Conditioning Specialist, Certificate

1990 Muscular Therapy Institute, Cambridge, MA
Massage Therapy Program

1995 National Strength and Conditioning Association
Personal Trainer, Certificate

1998 American Red Cross, Boston, MA
CPR/ FIRST AID/ AED Instructor Training

PROFESSIONAL ASSOCIATIONS

2010 - Present NASPA
2008 - Present Massachusetts Public Health Association, member
2007 - Present American Public Health Association, member
2005 - Present American College Health Association, member
1998 - Present American School Health Association, member
1989 - Present American Massage Therapy Association, member
1992 - Present National Athletic Training Association, member
1995 - Present National Strength and Conditioning Association, member

AWARDS

Athletic Trainer of the Year Award, 1993
BRIDGEWATER STATE COLLEGE, Bridgewater, MA

**National Collegiate Physical Education and Health Award
Nomination, 1993**