

ACHA-NCHA-II Reliability and Validity Analyses

Suggested citation: American College Health Association. American College Health Association-National College Health Assessment II: Reliability and Validity Analyses 2011. Hanover, MD: American College Health Association; 2013.

INTRODUCTION

The American College Health Association National College Health Assessment (ACHA-NCHA II) is largely based on the original ACHA-NCHA which was first launched in 2000. The ACHA-NCHA Advisory Committee decided that it was important to update the survey with emerging health issues that have been observed over the ensuing years. A few examples of some emerging issues are un-prescribed drug use, new birth control drugs/devices, and tobacco use with a water pipe. Other emerging issues were addressed with survey items accessing sleep related problems, more survey items accessing mental health measures and stress related issues that have been incorporated into the ACHA-NCHA II. The ACHA-NCHA Advisory Committee decided that after the first pilot conducted in the spring of 2007 that further additions and changes were necessary so a second pilot was conducted in the spring of 2008 to evaluate the survey prior to launching in the fall of 2008. The present analyses uses Spring 2009 and Spring 2010 data collection periods which had sample sizes of 87,105 and 95,712, respectively. A document has been produced pointing out the changes/additions/deletions in the two versions of the survey which can be accessed by the ACHA-NCHA web site (www.acha-ncha.org).

METHODS

The ACHA-NCHA II Pilot Studies were conducted in spring 2007 with 8 college/universities (N=8,458) and spring 2008 with 7 college/universities (N=7,681). Each of the pilot schools also collected data using the original ACHA-NCHA simultaneously with the ACHA-NCHA II by randomly assigning students to the original ACHA-NCHA or the ACHA-NCHA II. The purpose was to determine if there were systematic differences between the original ACHA-NCHA and the ACHA-NCHA II on overlapping items. Overall there were some differences but the magnitude of the effect

sizes was not large. Differences that were noted to be meaningful were with the first two responses categories in Academic Impediments (This did not happen to me/not applicable and I have experienced this issue but my academic have not been affected). There is no clear explanation for these differences but the responses for the categories where there was an academic impact were reasonably similar. Moving beyond the Pilot evaluations it was decided to run the analyses again with Spring 2009 and Spring 2010 data collection periods. The Spring 2009 had 117 institutions of higher education (IHEs) with 87,105 students submitting surveys. The Spring 2010 had 139 IHEs with 95,712 students submitting surveys. Only IHEs which randomized student selection or sampled all students were included in the Reference Group data sets.

The ACHA-NCHA II was intended to be a revised survey but the extent of the revisions, additions and deletions really make it more than a revised survey. Thus it is expected to produce some different results simply based on instrumentation effects alone. This means any change to an instrument can result in differences in survey results. As indicated the differences were not excessive. Another meaningful difference was the elimination of select all that apply structured questions from the ACHA-NCHA II. Instead of select all that apply the questions were restructured to be No, Yes. Select all that apply structured questions are inherently psychometrically weak. The denominator is composed of subjects who skipped the questions as well as those that the question truly does not apply. The resulting percentage will be biased to the lower percentage because it includes both individuals that skipped the question and those students where the survey item does not apply.

A Reliability and Validity Analyses was produced using the 2 pilot data sets. The present document will use the ACHA-NCHA II from Spring 2009 and Spring 2010. The demographic characteristics are described in both the Reference Group Data Reports as well as the Reference Group Executive Summaries. There is considerable variation in regional representation, size of campus public and private and Carnegie Classification for both Spring survey periods. The majority of IHEs were 4-year.

Principal Components Analyses and Reliability Analyses

The combined Reference Group data were subjected to additional analyses including Principal Components Factor Analysis and Reliability Analyses using SPSS (Statistical Package for the Social Sciences).² The purpose of the Principal Components Analysis was to determine groups of items that are related and it provides a structure to conduct Reliability Analysis. The Principal Component Analysis identifies components with Eigenvalues over 1. An Eigenvalue of 1 or larger is an indication of an acceptable component/factor solution. The Principal Components analyses were done using the ACHA-NCHA II from Spring 2009. Each component was then subjected to a Reliability Analysis. A Reliability analyses produces a number of statistics. The two statistics that are of main focus is the Standardized Alpha and the average inter-item correlation. The Standardized Alpha has a range of 0 to 1. The higher the number, the more reliable the set of items are considered. In other words the purpose of the Reliability Analysis is to determine if the items are likely to produce the same pattern of results when used again in a similar population. Although there are no strict rules as to what is considered an acceptable Standardized Alpha anything over a .7 is considered reasonable for forming a scale.³ A Reliability Analyses was also conducted using the Spring 2010 to determine how similar the results would be for the data sets. The average inter-item correlation indicates the magnitude of association within the group of items.

The Reliability Analyses focused on multiple groups of items under various topic areas. A Reliability analyses needs a minimum of 2 items to calculate an Alpha. It needs a least 3 items to calculate the “Alpha if item is deleted”. The “Alpha if item is deleted” shows you that if you remove a particular item from the scale, what the resulting Standardized Alpha will become. This is a useful method to determine if the group of items under analyses will work well as a scale. A scale can be formed by simply adding the individual items together or by producing the scale through the Principal Components Analyses by requesting factor scores to be produced. Scales will typically be more robust in a predictive hypotheses testing analytic model than a single item. The primary purpose of the present analyses was to demonstrate how reliable were various survey items of the ACHA-NCHA II and provide confirmation that individual researchers using the ACHA-

NCHA II will obtain similar results when using the instrument surveying students at their individual colleges/universities.

Construct Validity

Validity demonstrates whether an indicator actually captures the meaning of the construct in which there is interest.³ Perfect reliability and validity are virtually impossible to achieve. For example, sex (gender) is a common construct used by social scientists. Scientists often seek to determine whether males and females are similar or different with respect to multiple behaviors. For example, there is often a relationship between being male and consuming more alcohol than females. Females are coded “1” and males coded “2”. Thus, one would expect to see a positive correlation between sex and alcohol consumption. If the positive relation is seen with a repeated survey assessment period, one could say that the alcohol measure and its relation to sex are valid. When one has the ability to test multiple constructs from a survey and then repeat the survey again with another population of subjects, one can determine if various indicators or constructs are valid. Given the ability to test multiple constructs from two research databases, one can not only determine construct validity but also can perform replication. If two research studies survey populations at two points in time and there is a similar pattern of results, replication has been achieved. Replicating the measurement of a construct reinforces its validity, and replicating a finding increases confidence in the initial findings.

Measurement Validity

“Validity is part of a dynamic process that grows by accumulating evidence over time, and without it, all measurement becomes meaningless.”³ Measurement validity is the degree of fit between a construct and its indicators.³ For example, in the College Alcohol Studies (CAS),⁴ which are nationally representative, the term binge drinking is a construct. It was defined as drinking 5 or more alcoholic drinks at a sitting for males and 4 or more drinks for females. Please note that there are multiple definitions of binge. Originally it meant drinking excessively for multiple days in a row and disengaged from normal activities. The National Institutes of Alcohol and Alcoholism (NIAAA) defines

binge as reaching a level of .08 percent of blood alcohol. The Journal of Alcohol and Drug Studies formally the Journal of Alcohol Studies, presents guidelines to authors and indicates that the term binge should only be used to describe behavior in which drinking occurs over at least 2 days in which the person is intoxicated and gives up normal activities. Although there is disagreement regarding the definitions of the term 'binge,' and, uncertainty about the accuracy of the measure, (a male could drink 5 alcoholic beverages over a period of 6 hours and not be considered intoxicated), it is still a construct that may have utility in predicting alcohol- related consequences such as missing a class or receiving a lower grade on an exam. When the predicted relation is statistically significant and when the effect size is relatively strong, one has achieved a degree of measurement validity if the model is replicated overtime and with other data sets such as the ACHA-NCHA II. When the researcher also controls for demographics of the individuals that may be co-factors associated with the outcome measure (consequences), one has measured a phenomena. The better the fit of the statistical model to the hypothesized model, the greater the measurement specificity. It is not possible to achieve a perfect fit or absolute validity because constructs represent abstract ideas whereas indicators represent concrete observation.³ When an independent researcher is able to replicate the measurement equation with another population at a different period of time resulting in similar results (magnitude and direction), then measurement validity as well as replication of research findings has been achieved. If the survey instrument were flawed, the construct ill defined, or the findings not generalizable, the results of the measurement equation would be weak and the findings not replicable. If a study was poorly conducted, or the survey tool ill constructed, or the population not properly sampled, then replication would not be possible. On the other hand, if a measurement equation derived from a nationally represented sample is replicated, there is evidence that the sampling and methods of the replicated study are generalizable to the population.

Wechsler et al.⁵ published a manuscript in 2000 in which one analysis classified students into 3 groups: 1) Non Binge drinkers. 2) Occasional Binge Drinkers, and 3) Frequent Binge Drinking. The "Non Binge Drinkers" were students that drank alcohol but did not fall into the classification of Binge noted above. The "Occasional Binge

Drinkers” were students that drank alcohol on 1 or 2 occasions in the last two weeks that met the above criteria of Binge. The “Frequent Binge Drinkers” drank alcohol in the Binge pattern described above more than 2 times in the past 2 weeks. Basically, the measurement model hypothesized that “Occasional Binge Drinkers” in comparison with “Non Binge Drinkers” would be more likely to have resulting negative consequences of alcohol use. And, “Frequent Binge Drinkers” compared with “Non Binge Drinkers” would have even greater negative consequences of drinking. The model also controlled or adjusted for sex, marital status, age, year in school and parental education. The results are re-printed in Table 1C and show the Odds Ratio for the “Binge” dichotomy in predicting consequences. The original Reliability and Validity Analyses for the NCHA replicated this measurement model using 5 or drinks at a sitting in the last two weeks and with all control variables except for parental education for the ACHA-NCHA spring 1999, Fall 1999 pilot data and 2000 data collection efforts. The ACHA-NCHA spring 2000 survey had a reduced number of consequences measured but still had overlapping items with the CAS. The results showed strong replication of results in direction and magnitude across the 2 studies and four measurement periods. Those results demonstrate measurement validity.

As a further exercise in testing measurement validity with the ACHA-NCHA II the analyses was repeated using the spring 2007 pilot and the 2008 pilot. In this document this measurement validity was again tested using the Spring 2009 and Spring 2010 data sets. To simplify the number of tables presented a single table was developed that simply presented the odds ratio for the binge dichotomies predicting drinking consequences for all 6 tests of measurement validity using the original set of predictor variables. In keeping with the Guidelines of the Journal of Alcohol and Drug Studies and the various confusing if not misleading definitions and connotations of the term Binge the categories have been re-named “Non Risky Drinkers”, “Occasional Risky Drinkers” and “Frequent Risky Drinkers”. Please see Table 2C presenting the Adjusted Odds Ratios for Non Risky Drinkers versus Occasional Risky Drinkers. As an example, when viewing the Odds Ratios, a positive Odds Ratio of 2.00 means that Occasional Risky Drinkers are twice as likely to experience a consequence of drinking compared with the Non Risky Drinkers.

RESULTS

Individual Items Compared With Nationally Representative Data

Monitoring the Future (MTF) National Survey Results on Drug Use, 1975-2008 College Students & Adults Ages 19-50, 2008⁶ is a nationally representative sample of college/university students. The MTF also collected data with non-college/university samples. There are two tables in the MTF Monograph that can be compared with the ACHA-NCHA II Spring 2009 and Spring 2010 in the area of alcohol and drug use for 30 day prevalence and 30 day prevalence of Daily use. The MTF results from college students limited the sample to full time students between the ages of 19 to 22 years of age. The percentages derived in the Table A below from the ACHA-NCHA II also limited the sample to full time students between the ages of 19 to 22 years of age. Note that 30 day prevalence of Daily use was defined as 20 or more days except for cigarette smoking which was 30 day use. The same criteria Table A below uses the same criteria as MTF. Table B presents 30 day Daily use of selected drugs.

TABLE A

**Monitoring the Future (MTF): Thirty-Day Prevalence of use for Various
Types of Drugs, 2008 Versus ACHA-NCHA II Spring 2009 and Spring 2010**

	Total			Males			Females		
	MTF	NCHA	NCHA	MTF	NCHA	NCHA	MTF	NCHA	NCHA
	2008	2009	2010	2008	2009	2010	2008	2009	2010
Any Illicit Drug	18.9	19.4	20.6	23.1	23.4	25.0	16.2	17.3	18.3
Any Illicit Drug Minus Marijuana	7.3	5.6	5.9	9.6	6.4	6.9	5.8	5.2	5.3
Marijuana	17.0	17.0	18.3	22.1	21.4	23.1	13.6	14.7	15.8
Inhalants	0.4	0.3	0.3	0.5	0.5	0.5	0.3	0.2	0.2
Hallucinogens (LSD,PCP, MDMA, GHB Ketamine)	1.7	2.7	2.9	3.0	3.2	3.6	0.8	2.4	2.5
LSD	0.8	0.9	1.1	1.2	1.6	2.0	0.5	0.6	0.7
Hallucinogens minus LSD	1.3	0.9	1.3	2.6	1.3	1.8	0.4	0.7	1.0
MDMA	0.6	0.9	1.2	0.6	1.3	1.7	0.6	0.7	1.0
Cocaine	1.2	1.2	1.2	2.0	1.8	1.8	0.6	0.9	0.8
Opiates Heroin	<.05	0.5	0.5	0.1	0.9	1.0	<.05	0.2	0.2
Amphetamines	2.8	2.6	2.6	4.0	2.5	2.5	1.9	2.6	2.6
Sedatives	1.4	2.1	1.9	1.6	2.3	2.3	1.3	1.9	1.7
Alcohol	69.0	70.7	67.5	71.2	71.1	68.0	67.5	70.4	67.4
Cigarettes	17.9	16.6	15.1	20.0	20.1	18.8	16.6	14.7	13.9

TABLE B

Monitoring the Future (MTF): Thirty-Day Prevalence of Daily use for Various Types of Drugs, 2008 Versus ACHA-NCHA II Spring 2009 and Spring 2010

	Total			Males			Females		
	MTF	NCHA	NCHA	MTF	NCHA	NCHA	MTF	NCHA	NCHA
	2008	2009	2010	2008	2009	2010	2008	2009	2010
Marijuana	3.9	3.7	4.2	7.3	6.0	6.9	1.7	2.4	2.8
Cocaine	<0.05	0.1	0.1	0.1	0.2	0.2	<0.05	0.1	0.0
Amphetamines	0.2	0.7	0.7	0.1	0.6	0.6	0.2	0.7	0.7
Alcohol	4.0	3.6	3.3	5.1	5.8	5.0	3.3	2.4	2.4
Alcohol 5+ Drinks in a Row Last 2 Weeks	40.0	40.9	38.7	48.6	50.6	47.8	34.4	35.9	34.0
Cigarettes	9.2	4.2	3.7	9.8	5.0	4.3	8.8	3.8	3.4

Overall the results of the MTF and the ACHA-NCHA II 30 day use and 30 day Daily use for various drugs are very similar. MTF was more specific in surveying various drugs so some differences may simply be instrumentation effects where the survey instruments are different as well as the specificity of survey items. One noticeable difference is the daily cigarette use where MTF is nearly twice the percentage compared with the ACHA-NCHA II. It is unclear why this discrepancy exists. MTF indicates in a footnote that daily cigarette use is actual 30 day usage rather than 20 or more days for the other daily use drugs. Another potential effect is a growing number of IHEs banning cigarette smoking on campuses or restricting smoking to designated areas. On the other hand 30 day prevalence is pretty close between MTF and the ACHA-NCHA II so it is still unclear why there is the discrepancy between MTF and ACHA-NVHA II on the percentage of daily smoking.

Principal Components and Reliability Analyses

The first Principal Components Analysis was conducted with the “Received Information from your College/University Items” (NQ2A1 through NQ2B9) now and consisted of 19 items. The Principal Components Analysis identified 3 components with Eigenvalues over 1.

The first component was labeled “Received Physical Health Information” and the items are presented in Table 1A. The second component was labeled “Received Mental Health Information” and the items are presented in Table 2A. The third component was labeled “Miscellaneous Information” and the items are presented in Table 3A.

The first component had an Eigenvalue of 7.34 and accounted for 38.63% of the variance, the second component had an Eigenvalue of 1.21 and accounted for 6.38% of the variance and the third component had a Eigenvalue of 1.06 and accounted for 5.30% of the variance.

The Reliability Analysis resulted in an average inter-item correlation of .41 for the first component, .40 for the second component and .33 for the third component.

Table 1A, “Received Physical Health Information”, the Standardized Alpha was .83 for spring 2009 and spring 2010.

1A.	<i>Received Physical Health Information:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ2B4	Received information STD/I prevention	.79	.80
NQ2A1	Received information alcohol and other drugs	.80	.80
NQ2A8	Received information nutrition	.80	.81
NQ2A9	Received information physical activity	.80	.81
NQ2B3	Received information sexual assault prevention	.80	.81
NQ2A10	Received information pregnancy prevention	.81	.81
NQ2A2	Received information cold/flu/sore throat	.83	.83
	Standardized Alpha	.83	.83
	Average inter-item correlation	.41	.41

Table 2A, “Received Mental Health Information”, the Standardized Alpha was .84 for spring 2009 and .85 for spring 2010.

2A.	<i>Received Mental Health Information:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ2A5	Received information grief and loss	.82	.83
NQ2A3	Received information depression/anxiety	.82	.83
NQ2B7	Received information suicide prevention	.82	.83
NQ2A6	Received information help others in distress	.82	.83
NQ2A4	Received information eating disorder	.82	.83
NQ2B2	Received information relationship difficulties	.83	.84
NQ2B6	Received information stress reduction	.83	.84
NQ2B5	Received information sleep difficulties	.83	.84
	Standardized Alpha	.84	.85
	Average inter-item correlation	.40	.41

Table 3A, “Received Miscellaneous Information”, the Standardized Alpha was .66 for spring 2009 and spring 2010.

3A.	<i>Received Miscellaneous Information:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ2B1	Received information problem internet /games	.60	.67
NQ2A7	Received information injury/violence prevention	.60	.60
NQ2B9	Received information violence prevention	.57	.55
NQ2B8	Received information tobacco use	.52	.58
	Standardized Alpha	.66	.66
	Average inter-item correlation	.33	.33

The next Principal Components Analysis was conducted with the “Interested in Receiving Information from your College/University Items” (NQ3A1 through NQ3B9)

and consisted of 19 items. The Principal Components Analysis identified 2 components with Eigenvalues over 1.

The first component was labeled “Interested in Receiving Prevention Information” and the first two items are violence prevention and suicide prevention. All items are presented in Table 4A. The second component was labeled “Interested in Receiving Health Information” and the items are presented in Table 5A.

The first component had an Eigenvalue of 10.10 and accounted for 53.14% of the variance and the second component had an Eigenvalue of 1.34 and accounted for 7.06% of the variance. The Reliability Analysis resulted in an average inter-item correlation of .54 for the first component and .55 for the second component.

Table 4A, “Interested in Receiving Prevention Information”, the Standardized Alpha was .93 for spring 2009.

4A.	<i>Interested in Receiving: Prevention Information</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ3B9	Interested receiving violence prevention	.93	.93
NQ3B7	Interested receiving suicide prevention	.93	.93
NQ3B3	Interested receiving sexual assault violence	.93	.93
NQ3B4	Interested receiving STD/I prevention	.93	.93
NQ3B8	Interested receiving tobacco use	.93	.93
NQ3A1	Interested receiving alcohol other drug use	.93	.93
NQ3A10	Interested receiving pregnancy prevention	.93	.93
NQ3A4	Interested receiving eating disorder	.93	.93
NQ3A5	Interested receiving grief and loss	.93	.93
NQ3A7	Interested receiving injury/violence	.93	.93
NQ3B2	Interested receiving relationship difficulties	.93	.93
NQ3B1	Interested receiving problem internet/games	.93	.94
	Standardized Alpha	.93	.94
	Average inter-item correlation	.54	.56

Table 5A, “Interested in Receiving Health Information”, the Standardized Alpha was .90 for both spring 2009.

5A.	<i>Interested in Receiving Health Information:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ3A8	Interested receiving nutrition	.88	.88
NQ3B6	Interested receiving stress reduction	.87	.88
NQ3A9	Interested receiving physical activity	.88	.88
NQ3B5	Interested receiving sleep difficulties	.88	.89
NQ3A6	Interested receiving how help others in distress	.88	.88
NQ3A3	Interested receiving depression/anxiety	.88	.89
NQ3A2	Interested receiving cold/flu/sore throat	.90	.89
	Standardized Alpha	.90	.90
	Average inter-item correlation	.55	.56

The next Principal Components Analysis was conducted with the Violence and Assault Items (NQ5A THROUGH NQ5G, NQ6A, NQ6B NQ6C). The Principal Components Analysis identified 3 components with Eigenvalues over 1.

The first component was named “Sexual Assault” and the items are presented in Table 6A. The second component was labeled “Physical Assault” and the items are presented in Table 7A. The third component was named “Abusive Relationships” and the items are displayed in Table 8A. The first component had an Eigenvalue of 2.86 accounted for 28.56% of the variance, the second component had an Eigenvalue of 1.58 and accounted for 15.82% of the variance and the third component had a Eigenvalue of 1.13 and accounted for 11.25%.

The Reliability Analysis resulted in an average inter-item correlation of .43 for the first component, .36 for the second component and .23 for the third component.

Table 6A, “Sexual Assault”, the Standardized Alpha was .74 for spring 2009 and .76 for spring 2010.

6A.	<i>Sexual Assault:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ5E	Sexual penetration attempted without consent	.44	.48
NQ5F	Sexual penetration without consent	.57	.59
NQ5D	Sexually touched without consent	.77	.80
	Standardized Alpha	.74	.76
	Average inter-item correlation	.48	.51

Table 7A, “Physical Assault”, the Standardized Alpha was .63 for spring 2009 and .63 for spring 2010.

7A.	<i>Physical Assault:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ5A	In a physical fight	.41	.42
NQ5B	Physically assaulted	.47	.47
NQ5C	Verbally threatened	.59	.59
	Standardized Alpha	.63	.63
	Average inter-item correlation	.36	.36

Table 8A, “Abusive Relationships”, the Standardized Alpha was .55 for spring 2009 and .56 for spring 2010.

8A.	<i>Abusive Relationships:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ6A	Emotionally abusive relationship	.36	.36
NQ6B	Physically abusive relationship	.37	.38
NQ6C	Sexually abusive relationship	.45	.46
NQ5G	Victim of Stalking	.51	.52
	Standardized Alpha	.55	.56
	Average inter-item correlation	.24	.24

The next Principal Components Analysis was conducted with the Alcohol, Tobacco and Drugs section (NQ8A1 through NQ8B8). There are 17 items in total. The Principal Components Analysis identified 2 components with Eigenvalues over 1.

The first component was named “Infrequently Used Drugs” and the items are presented in Table 9A. The second component was labeled “Moderately Used Drugs” and the items are presented in Table 10A. The first component had an Eigenvalue of 6.40 accounted for 37.66% of the variance, the second component had an Eigenvalue of 2.13 and accounted for 12.52% of the variance.

The Reliability Analysis resulted in an average inter-item correlation of .41 for the first component, .33 for the second component and .30 for the third component.

Table 9A, “Rarely Used Drugs”, the Standardized Alpha was .89 for spring 2009 and .91 for spring 2010.

9A.	<i>Rarely Used Drugs:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ8B7	Other club drugs	.80	.83
NQ8B6	MDMA	.79	.83
NQ8B2	Hallucinogens	.79	.83
NQ8B5	Inhalants	.80	.83
NQ8B4	Opiates	.80	.83
NQ8A8	Methamphetamines	.80	.83
NQ8A7	Cocaine	.79	.83
NQ8B3	Anabolic steroids	.80	.83
NQ8B8	Other illegal drugs	.80	.83
NQ8B1	Sedatives	.80	.83
NQ8A9	Other amphetamines	.82	.85
NQ8A4	Smokeless tobacco	.86	.89
	Standardized Alpha	.89	.91
	Average inter-item correlation	.41	.44

Table 10A, “Moderately Used Drugs”, the Standardized Alpha was .74 for spring 2009 and .74 for spring 2010.

10A.	<i>Moderately Used Drugs:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ8A5	Alcohol	.67	.67
NQ8A6	Marijuana	.62	.62
NQ8A1	Cigarettes	.66	.66
NQ8A3	Cigars	.67	.67
NQ8A2	Tobacco from hookah	.67	.67
	Standardized Alpha	.74	.74
	Average inter-item correlation	.39	.37

The next Principal Components Analysis was conducted with the Perception of the typical student using Alcohol, Tobacco and Drugs section (NQ9A1 through NQ9B8). There are 17 items in total. The Principal Components Analysis identified 2 components with Eigenvalues over 1.

The first component was named “Perception Rarely/Infrequently Used Drugs” and the items are presented in Table 11A. The second component was labeled “Perception Moderately Used Drugs” and the items are presented in Table 12A. The first component had an Eigenvalue of 10.2 accounted for 60.0% of the variance, the second component had an Eigenvalue of 1.90 and accounted for 11.2% of the variance. The average inter-item correlation was .75 for the first component, and .55 for the second component.

Table 11A, “Perception Rarely/Infrequently Used Drugs”, the Standardized Alpha was .97 for spring 2009 and .97 spring 2010.

11A.	<i>Perception Rarely/infrequently Used Drugs:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ9B4	Opiates	.96	.97
NQ9B7	Other club drugs	.96	.97
NQ9B2	Hallucinogens	.96	.97
NQ9B5	Inhalants	.96	.97
NQ9B6	MDMA	.96	.97
NQ9B8	Other illegal drugs	.97	.97
NQ9B3	Anabolic Steroids	.97	.97
NQ9A8	Methamphetamine	.97	.97
NQ9B1	Sedatives	.97	.97
NQ9A7	Cocaine	.97	.97
NQ9A9	Other amphetamines	.97	.97
	Standardized Alpha	.97	.97
	Average inter-item correlation	.74	.75

Table 12A, “Perception Moderately Used Drugs”, the Standardized Alpha was .87 for spring 2009 and .88 for spring 2010.

12A.	<i>Perception Moderately Used Drugs:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ9A3	Cigars	.83	.84
NQ9A1	Cigarettes	.85	.86
NQ9A6	Marijuana	.85	.86
NQ9A2	Tobacco from a hookah	.85	.86
NQ9A5	Alcohol	.86	.87
NQ9A4	Smokeless Tobacco	.85	.86
	Standardized Alpha	.87	.88
	Average inter-item correlation	.53	.55

The next Principal Components Analysis was conducted with the Number of drinks last time partied/socialized, Last 2 weeks 5 or more drinks of alcohol at a sitting, hours last time partied/socialized, last 30 days drive after drinking any alcohol, last 30 days drive after having 5 or more drinks (NQ10, NQ11, NQ13, NQ14A, NQ14B). The Principal Components Analysis identified 2 components with Eigenvalues over 1.

The first component was named “Party drinking” and the items are presented in Table 13A. The second component was labeled “Drinking and driving” and the items

are presented in Table 14A. The first component had an Eigenvalue of 2.72 accounted for 54.5% of the variance, the second component had an Eigenvalue of 1.39 and accounted for 27.7% of the variance. The Reliability Analysis resulted in an average inter-item correlation of .60 for the first component, and .87 for the second component. Table 14A, “Party Drinking”, the Standardized Alpha was .82 for spring 2007 and .84 for spring 2008.

13A.	<i>Party drinking:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ10	Number of drinks last time partied/socialized	.63	.61
NQ13	Last 2 weeks 5 or more drinks at a sitting	.73	.72
NQ11	Hours drinking last time partied /socialized	.65	.62
	Standardized Alpha	.82	.80
	Average inter-item correlation	.60	.58

Table 14A, “Drinking and driving”, the Standardized Alpha was .96 for spring 2009 and .95 for spring 2010. A Reliability Analysis needs 3 or more items to compute “Alpha if item is deleted”.

14A.	<i>Drinking and driving:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ14B	Last 30 days drive after having 5 or more drinks		
NQ14A	Last 30 days drive after drinking any alcohol		
	Standardized Alpha	.96	.95
	Average inter-item correlation	.91	.90

The next Principal Components Analysis was conducted with the Protective behaviors when partied/socialized and drinking (NQ15A-NQ15K). There are 11 items in total. The Principal Components Analysis identified 1 component with an Eigenvalue over 1.

The component was named “Protective behaviors while drinking” and the items are presented in Table 15A. The component had an Eigenvalue of 7.62 and accounted for

69.3% of the variance. The Reliability Analysis resulted in an average inter-item correlation of .66.

Table 15A, “Protective behaviors while drinking”, the Standardized Alpha was .96 for spring 2009 and spring 2010.

15A.	<i>Protective Behaviors While Drinking:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ15I	Stay with the same group of friends while drinking	.95	.95
NQ15E	Eat before/during while drinking	.95	.95
NQ15G	Keep track of how many drinks	.95	.95
NQ15J	Stick with only one kind of alcohol	.95	.95
NQ15H	Pace drinks to 1 or less per hour	.95	.95
NQ15D	Determine in advance not exceed number of drinks	.95	.95
NQ15K	Use a designated driver	.95	.95
NQ15A	Alternate non-alcoholic with alcohol drinks	.95	.96
NQ15B	Avoid drinking games	.95	.96
NQ15F	Have a friend let you know have had enough	.95	.96
NQ15C	Chose not to drink alcohol	.95	.96
	Standardized Alpha	.96	.96
	Average inter-item correlation	.66	.68

The next Principal Components Analysis was conducted with the Consequences of drinking (NQ16A-NQ16I). There are 9 items in total. The Principal Components Analysis identified 1 component with an Eigenvalue over 1.

The component was named “Consequences of drinking” and the items are presented in Table 16A. The component had an Eigenvalue of 7.57 and accounted for 84.1% of the variance. The Reliability Analysis resulted in an average inter-item correlation of .81.

Table 16A, “Consequences of drinking”, the Standardized Alpha was .98 for spring 2009 and .98 for spring 2010.

16A.	<i>Consequences of Drinking:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ16E	Had sex without getting consent	.96	.97
NQ16D	Had sex without giving consent	.96	.97
NQ16I	Seriously considered suicide	.96	.97
NQ16H	Physically injured other	.96	.97
NQ16C	Got in trouble with police	.96	.97
NQ16G	Physically injured self	.96	.97
NQ16F	Had unprotected sex	.97	.97
NQ16B	Forgot where/what you did	.97	.97
NQ16A	Did something later regretted	.97	.97
	Standardized Alpha	.98	.98
	Average inter-item correlation	.82	.83

The next Principal Components Analysis was conducted with Taking prescription drugs not prescribed (NQ18A-NQ18E). There are 5 items in total. The Principal Components Analysis identified 1 component with an Eigenvalue over 1.

The component was named “Taken un-prescribed drugs” and the items are presented in Table 17A. The component had an Eigenvalue of 2.38 and accounted for 47.5% of the variance. The Reliability Analysis resulted in an average inter-item correlation of .34.

Table 17A, “Taken Un-Prescribed Drugs”, the Standardized Alpha was .72 for both spring 2009 and spring 2010.

17A.	<i>Taken Un-prescribed Drugs:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ18D	Sedatives	.58	.58
NQ18A	Antidepressants	.64	.64
NQ18B	Erectile dysfunction	.67	.67
NQ18C	Pain killers	.64	.64
NQ18E	Stimulants	.64	.64
	Standardized Alpha	.72	.72
	Average inter-item correlation	.34	.34

The next Principal Components Analysis was conducted with the Mental Health section (NQ30A through NQ30K). There are 11 items in total. The Principal Components Analysis identified 3 components with Eigenvalues over 1.

The first component was named “Mental Health” and the items are presented in Table 18A. The second component was labeled “Mental Health Harm” and the items are presented in Table 19A. The third component was labeled Mental Health Overwhelmed/ Exhausted. The first component had an Eigenvalue of 3.93 accounted for 35.7% of the variance, the second component had an Eigenvalue of 1.77 and accounted for 16.13% of the variance. The third component has an Eigenvalue of 1.11 and accounted for 10.10% of the variance. The Reliability Analysis resulted in an average inter-item correlation of .45 for the first component, .43 for the second component and .58 for the third component.

Table 18A, “Mental Health”, the Standardized Alpha was .83 for spring 2009 and .84 for spring 2010.

18A.	<i>Mental Health:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ30F	Felt so depressed difficult to function	.80	.81
NQ30G	Felt overwhelming anxiety	.80	.81
NQ30E	Felt very sad	.80	.80
NQ30H	Felt overwhelming anger	.81	.82
NQ30A	Felt things were hopeless	.80	.81
NQ30D	Felt very lonely	.80	.81
	Standardized Alpha	.83	.84
	Average inter-item correlation	.45	.46

Table 19A, “Mental Health Harm”, the Standardized Alpha was .70 for spring 2009 and .71 for spring 2010.

19A.	<i>Mental Health Harm:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ30J	Seriously considered suicide	.50	.53
NQ30K	Ever attempted suicide	.62	.62
NQ30I	Intentionally injured self	.53	.56
	Standardized Alpha	.70	.71
	Average inter-item correlation	.43	.45

Table 20A, “Mental Health Harm”, the Standardized Alpha was .73 for spring 2009 and .74 for spring 2010.

20A.	<i>Mental Health Overwhelmed/ Exhausted:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ30B	Felt overwhelmed		
NQ30C	Felt exhausted		
	Standardized Alpha	.73	.74
	Average inter-item correlation	.58	.59

The next Principal Components Analysis was conducted with the Diagnosed in last 12 months section (NQ31A1 through NQ31B7). There are 15 items in total. The Principal Components Analysis identified 3 components with Eigenvalues over 1.

The first component was named “Diagnosed Anxiety/Depression” and the items are presented in Table 23A. The second component was labeled “Diagnosed Other Mental Health Difficulties” and the items are presented in Table 24A. The third component was named “Diagnosed substance Abuse/Schizophrenia” and the items are presented in Table 25A. The fourth component named “Diagnosed Eating Disorder and included Diagnosed Anorexia, and Diagnosed Bulimia”. The first component had an Eigenvalue of 3.88 and accounted for 25.89% of the variance, the second component had an Eigenvalue of 1.54 and accounted for 10.23% of the variance the third component had

an Eigenvalue of 1.12 and accounted for 7.49% of the variance and the fourth component had an Eigenvalue of 1.02 and accounted for 6.77% of the variance.

The Reliability Analysis resulted in an average inter-item correlation of .52 for the first component, .18 for the second component, .29 for the third component, and .43 for the fourth component.

Table 21A, “Diagnosed Anxiety/Depression”, the Standardized Alpha was .76 for spring 2009 and .77 for spring 2010.

21A.	<i>Diagnosed Anxiety/Depression:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ31A2	Diagnosed Anxiety	.50	.54
NQ31B2	Diagnosed Panic attacks	.76	.76
NQ31A6	Diagnosed Depression	.68	.71
	Standardized Alpha	.76	.77
	Average inter-item correlation	.52	.53

Table 22A, “Diagnosed Other Mental Health Difficulties”, the Standardized Alpha was .56 for spring 2009 and .60 for spring 2010.

22A.	<i>Diagnosed Other Mental Health Difficulties:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ31A4	Diagnosed bipolar disorder	.50	.54
NQ31A7	Diagnosed insomnia	.48	.53
NQ31A8	Diagnosed other sleep disorder	.51	.56
NQ31B7	Diagnosed other mental health condition	.51	.56
NQ31A3	Diagnosed ADHD	.54	.58
NQ31B5	Substance abuse/addiction	.53	.57
	Standardized Alpha	.56	.60
	Average inter-item correlation	.18	.20

Table 23A, “Diagnosed Substance Abuse/Schizophrenia”, the Standardized Alpha was .62 for spring 2009 and .68 for spring 2010.

23A.	<i>Diagnosed Substance Abuse/Schizophrenia:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ31B3	Diagnosed phobia	.43	.50
NQ31B4	Diagnosed schizophrenia	.48	.53
NQ31B6	Diagnosed other addiction	.48	.54
NQ31B1	Diagnosed obsessive compulsive disorder	.56	.64
	Standardized Alpha	.62	.68
	Average inter-item correlation	.29	.34

Table 24A, “Diagnosed Eating Disorder”, the Standardized Alpha was .60 for spring 2009 and .59 for spring 2010. Again, a Reliability Analysis needs at least 3 items to calculate Alpha if item deleted.

24A.	<i>Diagnosed Eating Disorder:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ31A1	Diagnosed Anorexia		
NQ31A5	Diagnosed Bulimia		
	Standardized Alpha	.60	.59
	Average inter-item correlation	.43	.42

The next Principal Components Analysis was conducted with the Traumatic or Very Difficult to Handle section (NQ33A through NQ33L). There are 12 items in total. The Principal Components Analysis identified 2 components with Eigenvalues over 1.

The first component was named “Interpersonal Difficulties” and the items are presented in Table 21A. The second component was labeled “Family Difficulties” and the items are presented in Table 22A. The first component had an Eigenvalue of 3.73 and accounted for 31.09% of the variance, the second component had an Eigenvalue of 1.10 and accounted for 9.15% of the variance. The Reliability Analysis resulted in an average inter-item correlation of .26 for the first component, and .26 for the second component.

Table 25A, “Interpersonal Difficulties”, the Standardized Alpha was .77 for spring 2009 and .77 for spring 2010.

25A.	<i>Interpersonal Difficulties:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ33I	Personal appearance	.74	.74
NQ33F	Other relationships	.74	.74
NQ33A	Academics	.74	.74
NQ33J	Personal health issues	.75	.75
NQ33K	Sleep difficulties	.75	.75
NQ33G	Finances	.75	.75
NQ33B	Career related issues	.75	.75
NQ33E	Intimate relations	.76	.76
NQ33L	Other	.76	.76
	Standardized Alpha	.77	.77
	Average inter-item correlation	.27	.27

Table 26A, “Family Difficulties”, the Standardized Alpha was .53 for spring 2009 and .53 for spring 2010.

26A.	<i>Family Difficulties:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ33C	Death of family member/friend	.52	.52
NQ33H	Health problems of family member/partner	.33	.32
NQ33D	Family problems	.42	.42
	Standardized Alpha	.53	.53
	Average inter-item correlation	.27	.28

The next Principal Components Analysis was conducted with Diagnosed or Treated by a Professional (NQ41A1 through NQ41B12). There are 25 items in total. The Principal Components Analysis identified 7 components with Eigenvalues over 1. The first component was named “Diagnosed- STI” and the items are presented in Table 27A. The second component is named “Diagnosed-Chronic Disease” and the items are presented in Table 28A. The third component was labeled “Diagnosed- Upper Respiratory” and the items are presented in Table 29A. The fourth component was labeled “Diagnosed Asthma Allergies” and the items are presented in Table 30A. The fifth

component was labeled “Diagnosed- High Blood Pressure/High Cholesterol/Diabetes” and the items are presented in Table 31A. The sixth component was labeled “Diagnosed- Urinary tract infection, Migranes/ Irritable Bowel syndrome and the items are presented in Table 32A. The seventh component was labeled “Diagnosed- Broken bone/back pain Repettive Stress injury and the items are presented in Table 33A.

The first component had an Eigenvalue of 3.82, and accounted for 15.3% of the variance, the second component had an Eigenvalue of 2.00 and accounted for 7.99% of the variance, the third component had an Eigenvalue of 1.29 and accounted for 5.15% of the variance, the forth component had an Eigenvalue of 1.18 and accounted for 4.71% of the variance, the fifth component had a Eigenvalue of 1.07 and accounted for 4.28% of variance, the sixth component had a Eigenvalue of 1.04 and accounted for 4.15% of the variance, the seventh component had an Eigenvalue of 1.03 and accounted for 4.13% of the variance. The Reliability Analysis resulted in an average inter-item correlation of .26 for the first component, .41 for the second component, .20 for the third component, .36 for the forth component, .29 for the fifth component, .10 for the sixth component, and .10 for the seventh component.

Table 27A, “Diagnosed/Treated STI”, the Standardized Alpha was .67 for spring 2009 and .70 for spring 2010.

27A.	<i>Diagnosed/Treated STI:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ41A12	Gonorrhea	.52	.55
NQ41A13	Hepatitis B or C	.55	.58
NQ41A10	Genital herpes	.54	.58
NQ41A6	Chlamydia	.55	.60
NQ41A11	Genital warts/HPV	.64	.66
NQ41A9	Endometriosis	.58	.61
	Standardized Alpha	.67	.70
	Average inter-item correlation	.26	.28

Table 28A, “Diagnosed/Treated Chronic Disease”, the Standardized Alpha was .68 for spring 2009 and .69 for spring 2010.

28A.	<i>Diagnosed/Treated Chronic Disease:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ41B7	Pelvic inflammatory disease	.55	.56
NQ41B11	Tuberculosis	.63	.64
NQ41B3	HIV	.56	.57
<i>NQ41B6</i>	<i>Mononucleosis Deleted</i>	<i>.67</i>	<i>.68</i>
	Standardized Alpha	.68	.69
	Average inter-item correlation	.41	.42

Table 29A, “Diagnosed/Treated Upper Respiratory”, the Standardized Alpha was .50 for spring 2009 and .51 for spring 2010.

29A.	<i>Diagnosed Treated-Upper Respiratory:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ41B10	Strep Throat	.43	.44
NQ41B9	Sinus Infection	.35	.36
NQ41A8	Ear Infection	.45	.46
NQ41A5	Bronchitis	.46	.47
	Standardized Alpha	.50	.51
	Average inter-item correlation	.20	.21

Table 30A, “Diagnosed/Treated Asthma/Allergies”, the Standardized Alpha was .53 for spring 2009 and .53 for spring 2010.

30A.	<i>Diagnosed Treated Asthma/Allergies:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ41A2	Asthma		
NQ41A1	Allergies		
	Standardized Alpha	.53	.53
	Average inter-item correlation	.36	.36

Table 31A, “Diagnosed/Treated High Blood Pressure/high Cholesterol”, the Standardized Alpha was .45 for spring 2009 and .48 for spring 2010.

31A.	<i>Diagnosed Treated High blood Pressure/High Cholesterol:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ41B1	High Blood Pressure		
NQ41B2	High Cholesterol		
NQ41A7	Diabetes Deleted		
	Standardized Alpha	.45	.48
	Average inter-item correlation	.29	.32

Table 32A, “Diagnosed/Treated Urinary Track Infection/Migraines/ Irritable Bowl Syndrome”, the Standardized Alpha was .25 for spring 2009 and .26 for spring 2010.

32A.	<i>Diagnosed Treated Urinary Track Infection Migraines/Irritable Bowl Syndrome:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ41B12	Urinary Track Infection	.17	.18
NQ41B5	Migraines	.14	.14
NQ41B4	Irritable Bowl Syndrome	.21	.20
	Standardized Alpha	.25	.26
	Average inter-item correlation	.10	.11

Table 33A, “Diagnosed/Treated Broken Bone/Back pain/Repetitive Stress injury”, the Standardized Alpha was .25 for spring 2009 and .27 for spring 2010.

33A.	<i>Diagnosed Treated Broken Bone/Back Pain/Repetitive Stress Injury:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ41A4	Broken Bone/Sprain	.13	.15
NQ41A3	Back Pain	.15	.15
NQ41B8	Repetitive Stress Injury	.19	.20
	Standardized Alpha	.25	.27
	Average inter-item correlation	.10	.11

The next Principal Components Analysis was conducted with the Impediments to Academic Performance (NQ45A1 through NQ45D7). There are 31 items in total. The Principal Components Analysis identified 8 components with Eigenvalues over 1.

The first component was named “Academic- Interpersonal Difficulties” and the items are presented in Table 34A. The second component is named “Academic- Sickness Difficulties” and the items are presented in Table 35A. The third component was labeled “Academic-Extracurricular Difficulties” and the items are presented in Table 36A. The fourth component was labeled “Academic-Chronic difficulties” and the items are presented in Table 37A. The fifth component was labeled “Academic Assault” and the items are presented in Table 38A. The sixth component was labeled “Academic-Learning Difficulties” and the items are presented in Table 39A. The seventh component was labeled “Finances” and the items are presented in Table 40A. The eighth component was labeled “Academic-drugs and Alcohol” and the items are presented in Table 41A.

The first component had an Eigenvalue of 6.20, and accounted for 20.0% of the variance, the second component had an Eigenvalue of 2.22 and accounted for 7.15% of the variance, the third component had an Eigenvalue of 1.42 and accounted for 4.59% of the variance, the fourth component had an Eigenvalue of 1.35 and accounted for 4.36% of the variance, the fifth component had a Eigenvalue of 1.16 and accounted for 3.75% of variance, the sixth component had a Eigenvalue of 1.11 and accounted for 3.58% of the variance, the seventh component had an Eigenvalue of 1.05 and accounted for 3.39% of the variance, the eighth component had an Eigenvalue 1.01 and accounted for 3.27% of the variance.

The Reliability Analysis resulted in an average inter-item correlation of .40 for the first component, and .40 for the second component.

Table 34A, “Academic-Interpersonal Difficulties”, the Standardized Alpha was .79 for spring 2009 and .79 for spring 2010.

34A.	<i>Academic-Interpersonal Difficulties:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ45D5	Stress	.73	.73
NQ45A3	Anxiety	.75	.76
NQ45D4	Sleep difficulties	.76	.76
NQ45B4	Depression	.76	.76
NQ45D6	Work	.78	.78
NQ44B8	Finances	.78	.78
NQ44C8	Relationship difficulties	.78	.78
	Standardized Alpha	.79	.79
	Average inter-item correlation	.35	.35

Table 35A, “Victimization”, the Standardized Alpha was .74 for spring 2009 and .76 for spring 2010.

35A.	<i>Academic-Victimization and other physical stressors:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ45A4	Physical assault	.67	.70
NQ45D2	STD/I	.67	.70
NQ45A5	Sexual assault	.67	.70
NQ45C1	Gambling	.68	.71
NQ45C7	Pregnancy	.69	.72
NQ45B5	Discrimination	.68	.71
NQ45B7	Eating disorder/problem	.68	.72
NQ45D7	Other	.73	.75
	Standardized Alpha	.74	.76
	Average inter-item correlation	.26	.28

Table 36A, “Academic-Extracurricular Difficulties”, the Standardized Alpha was .51 for spring 2009 and .51 for spring 2010.

36A.	<i>Academic-Extracurricular Difficulties:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ45C6	Participation extracurricular activities	.43	.42
NQ45C4	Internet use/computer games	.43	.44
NQ45C2	Homesickness	.44	.44
NQ45D1	Roommate difficulties	.45	.45
	Standardized Alpha	.51	.51
	Average inter-item correlation	.21	.21

Table 37A, “Academic-Chronic Difficulties”, the Standardized Alpha was .59 for spring 2009 and .59 for spring 2010.

37A.	<i>Academic-Acute Sickness:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ45A7	Cold/flu/sore throat	.43	.44
NQ45D3	Sinus/ear/infection/strep throat	.42	.44
NQ45A2	Allergies	.56	.55
	Standardized Alpha	.59	.59
	Average inter-item correlation	.32	.33

Table 38A, “Academic-Chronic Health Problems”, the Standardized Alpha was .56 for spring 2009 and .58 for spring 2010.

38A.	<i>Academic-Chronic Health problems:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ45B2	Chronic pain	.29	.31
NQ45B1	Chronic health problems	.45	.48
NQ45C3	Injury	.60	.62
	Standardized Alpha	.56	.58
	Average inter-item correlation	.30	.32

Table 39A, “Academic-Learning Disability”, the Standardized Alpha was .60 for spring 2009 and .59 for spring 2010.

39A.	<i>Academic-Learning Disability:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ45A6	ADHD		
NQ45C5	Learning disability		
	Standardized Alpha	.60	.59
	Average inter-item correlation	.43	.42

Table 40A, “Academic-Economic Difficulties”, the Standardized Alpha was .56 for spring 2009 and .56 for spring 2010.

40A.	<i>Academic-Family Concerns:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ45B3	Death family member/friend		
NQ45A8	Concern family member/friend		
	Standardized Alpha	.56	.56
	Average inter-item correlation	.38	.39

Table 41A, “Academic-Alcohol Drug Use”, the Standardized Alpha was .47 for spring 2009 and .50 for spring 2010.

41A.	<i>Academic-Alcohol Drug use:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ45A1	Alcohol use		
NQ45B6	Drug use		
	Standardized Alpha	.47	.50
	Average inter-item correlation	.31	.34

The next Principal Components Analysis was conducted with the Disability Items (NQ65A through NQ65I). There are 9 items in total. The Principal Components Analysis identified 3 components with Eigenvalues over 1.

The first component was named “Physical Disability” and the items are presented in Table 42A. The second component was labeled “Learning Disability” and the items are presented in Table 43A. The third component was labeled “Chronic Disability” and the items are presented in Table 44A. The first component had an Eigenvalue of 1.99 and accounted for 21.97% of the variance, the second component had an Eigenvalue of 1.14 and accounted for 12.67% of the variance the third component had an Eigenvalue of 1.01 and accounted for 11.17% of the variance.

The Reliability Analysis resulted in an average inter-item correlation of .16 for the first component, .33 for the second component, and .14 for the third component.

Table 42A, “Physical Disability”, the Standardized Alpha was .36 for spring 2009 and .36 for spring 2010.

42A.	<i>Physical Disability:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ65F	Partially Sighted/Blind	.28	.27
NQ65C	Deaf/hard of hearing	.25	.26
NQ65H	Speech or language disorder	.25	.26
	Standardized Alpha	.36	.36
	Average inter-item correlation	.16	.16

Table 43A, “Learning Disability”, the Standardized Alpha was .33 for spring 2009 and .31 for spring 2010. One item was deleted from the Reliability analyses, Psychiatric condition, because it reduced the overall Alpha.

43A.	<i>Learning Disability:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ65A	ADHD		
NQ65D	Learning disability		
	Standardized Alpha	.49	.48
	Average inter-item correlation	.33	.31

Table 44A, “Chronic Disability”, the Standardized Alpha was .39 for spring 2009 and .41 for spring 2010.

44A.	<i>Chronic Disability:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ65B	Chronic Illness	.27	.32
NQ65E	Mobility Disability	.28	.29
NQ65I	Other Disability	.27	.29
NQ65G	Psychiatric condition	.31	.33
	Standardized Alpha	.39	.41
	Average inter-item correlation	.14	.15

Principal Component Analyses was not conducted with the Exercise Guidelines as there were only four variables. The average inter-item correlation was .60 for spring 2009 and .61 for spring 2010. Table 45A, “Exercise Guidelines”, the Standardized Alpha was .86 for spring 2009 and .86 for spring 2010.

45A.	<i>Exercise Guidelines:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ29A	7 days Moderate Exercise 30 minutes	.72	.72
NQ29B	7 days Vigorous Exercise 20 minutes	.64	.64
NQ29C	7 days Strengthen Muscles 8-12 repetitions	.73	.74
PAREQ	Physical Activities Guidelines Met	.79	.80
	Standardized Alpha	.86	.86
	Average inter-item correlation	.60	.61

The next Principal Components Analysis was conducted with the Sexual health related items. (NQ19, NQ21A-C, NQ22A-C, NQ23A, NQ24, NQ25, NQ41A6, NQ41A10, NQ41A11, NQ41A12, NQ41B3, NQ41B7, NQ41B12)). There are 17 items in total. The Principal Components Analysis identified 4 components with Eigenvalues over 1.

The first component was named “Sexual Activity” and the items are presented in Table 46A. The second component was labeled “Diagnosed /treated for STI” and the items are presented in Table 47A. The third component was labeled “Anal Sexual Activity” and the items are presented in Table 48A. The fourth component made little sense and is not presented. The first component had an Eigenvalue of 4.55 and accounted for 26.74% of the variance, the second component had an Eigenvalue of 2.45 and accounted for 14.44% of the variance the third component had an Eigenvalue of 1.55 and accounted for 9.13% of the variance.

The Reliability Analysis resulted in an average inter-item correlation of .52 for the first component, .28 for the second component, and .72 for the third component.

Table 46A, “Sexual Activity”, the Standardized Alpha was .88 for spring 2009 and .89 for spring 2010.

46A.	<i>Sexual Activity:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ21B	Last 30 days: Vaginal Intercourse	.68	.70
NQ24	Last 12 months: Used emergency contraception	.71	.73
NQ21A	Last 30 days: Oral sex	.70	.71
NQ22B	Last 30 days: Condom/barrier vaginal intercourse	.68	.68
NQ25	Last 12 months: You/partner became pregnant	.72	.73
NQ22A	Last 30 days: Condom/barrier oral sex	.69	.70
NQ19	Last 12 months: Number of sexual partners	.83	.84
	Standardized Alpha	.88	.89
	Average inter-item correlation	.52	.54

Table 47A, “Diagnosed/treated for STI”, the Standardized Alpha was .70 for spring 2009 and .76 for spring 2010.

47A.	<i>Diagnosed/treated STI:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ41A12	Last 12 months: Diagnosed/treated Gonorrhea	.52	.64
NQ41B3	Last 12 months: Diagnosed/treated HIV	.56	.66
NQ41B7	Last 12 months: Diagnosed treated Pelvic inflammatory disease sex	.56	.67
NQ41A6	Last 12 months: Chlamydia	.55	.69
NQ41A10	Last 12 months: Diagnosed/treated Genital Herpes	.55	.66
NQ41A11	Last 12 months: Diagnosed /treated Genital warts/HPV	.67	.73
	Standardized Alpha	.70	.76
	Average inter-item correlation	.28	.35

Table 48A, “Anal Sexual Activity”, the Standardized Alpha was .84 for spring 2009 and .83 for spring 2010.

48A.	<i>Anal Sexual Activity:</i>	Alpha if item deleted Spring 2009	Alpha if item deleted Spring 2010
NQ22C	Last 30 days: Condom/barrier during anal intercourse		
NQ21C	Last 30 days: Anal intercourse		
	Standardized Alpha	.84	.83
	Average inter-item correlation	.72	.71

Construct Validity

The Construct Validity analyses used the same items that were subject to the above Reliability analyses. Of interest is the pattern of results between the 2 time periods not the magnitude of the relationships. In other words do you get the same results from 2 time periods with different college/universities in deriving the association between gender and individual items? In some cases one would expect to see a different pattern in magnitude and direction of the association when conducting many associations. But overall one should expect the majority of the associations to be approximately the same in magnitude and in direction. The analyses to derive the associations were a Non-Parametric analyses deriving the Kendall’s tau b. The tau b will be exactly the same as a Pearson correlation coefficient if there is a linear relationship. Pearson's correlation coefficient assumes that each pair of variables is bivariate normal². This is the case for a majority of the analyses below but the tau-b was chosen as a more conservative approach in case the relationship was not linear. Please note that the nature of the survey item will also affect the level of validity. For example not all college/universities are going to give out information on the same topics. Thus “receiving mental health information” may show less consistency then items that measure behaviors. Also not that many coefficients are highly significant yet their magnitudes are rather small. This is a direct result of sample size. With large sample sizes such as the two pilots it becomes imperative to look at the magnitude of the effect sizes rather than the significant levels. Each table below is presented without narrative. Please view the magnitude of effect size and direction

(positive or negative) between spring 2007 and spring 2008. Gender included females and males. Females were coded “1” and males were coded “2”. Transgender was not included because of the relatively small numbers. All questions that were “no” / “yes” were coded “no” as “1” and “yes” as “2”. Significant negative correlations show that females endorsed “yes” and conversely males endorsed “no”.

1B.	<i>Received Physical Health Information:</i>	Gender Spring 2009	Gender Spring 2010
NQ2B4	Received information STD/I prevention	.026	.029
NQ2A1	Received information alcohol and other drugs	.030	.024
NQ2A8	Received information nutrition	-.014	-008
NQ2A9	Received information physical activity	.016	.019
NQ2B3	Received information sexual assault prevention	-.021	-.029
NQ2A10	Received information pregnancy prevention	-.017	-.010
NQ2A2	Received information cold/flu/sore throat	-.030	-.044

2B.	<i>Received Mental Health Information:</i>	Gender Spring 2009	Gender Spring 2010
NQ2A5	Received information grief and loss	.026	.031
NQ2A3	Received information depression/anxiety	-.019	-.005
NQ2B7	Received information suicide prevention	.036	.045
NQ2A6	Received information help others in distress	.029	.033
NQ2A4	Received information eating disorder	-.030	-.019
NQ2B2	Received information relationship difficulties	-.020	-.024
NQ2B6	Received information stress reduction	-.048	-.042
NQ2B5	Received information sleep difficulties	.011	.023

3B.	<i>Received Miscellaneous Information:</i>	Gender Spring 2009	Gender Spring 2010
NQ2B1	Received information problem internet /games	.010	.024
NQ2A7	Received information injury/violence prevention	.079	.085
NQ2B9	Received information violence prevention	.015	.017
NQ2B8	Received information tobacco use	.026	.037

4B.	<i>Interested in Receiving: Prevention Information</i>	Gender Spring 2009	Gender Spring 2010
NQ3B9	Interested receiving violence prevention	-.087	-.083
NQ3B7	Interested receiving suicide prevention	-.057	-.060
NQ3B3	Interested receiving sexual assault violence	-.152	-.146
NQ3B4	Interested receiving STD/I prevention	-.052	-.055
NQ3B8	Interested receiving tobacco use	-.006	-.006
NQ3A1	Interested receiving alcohol other drug use	-.015	-.019
NQ3A10	Interested receiving pregnancy prevention	-.074	-.075
NQ3A4	Interested receiving eating disorder	-.099	-.096
NQ3A5	Interested receiving grief and loss	-.082	-.084
NQ3A7	Interested receiving injury/violence	-.019	-.017
NQ3B2	Interested receiving relationship difficulties	-.075	-.083
NQ3B1	Interested receiving problem internet/games	.041	.035

5B.	<i>Interested in Receiving Health Information:</i>	Gender Spring 2009	Gender Spring 2010
NQ3A8	Interested receiving nutrition	-.120	-.119
NQ3B6	Interested receiving stress reduction	-.150	-.150
NQ3A9	Interested receiving physical activity	-.087	-.083
NQ3B5	Interested receiving sleep difficulties	-.091	-.089
NQ3A6	Interested receiving how help others in distress	-.096	-.095
NQ3A3	Interested receiving depression/anxiety	-.106	-.109
NQ3A2	Interested receiving cold/flu/sore throat	-.076	-.074

6B.	<i>Sexual Assault:</i>	Gender Spring 2009	Gender Spring 2010
NQ5E	Sexual penetration attempted without consent	-.074	-.071
NQ5F	Sexual penetration without consent	-.046	-.051
NQ5D	Sexually touched without consent	-.077	-.077

7B.	<i>Physical Assault:</i>	Gender Spring 2009	Gender Spring 2010
NQ5A	In a physical fight	.162	.161
NQ5B	Physically assaulted	.060	.056
NQ5C	Verbally threatened	.142	.130

8B.	<i>Abusive Relationships:</i>	Gender Spring 2009	Gender Spring 2010
NQ6A	Emotionally abusive relationship	-.057	-.064
NQ6B	Physically abusive relationship	.004	-.002
NQ6C	Sexually abusive relationship	-.038	-.035
NQ5G	Victim of Stalking	-.074	-.080

9B.	<i>Rarely Used Drugs:</i>	Gender Spring 2009	Gender Spring 2010
NQ8B7	Other club drugs	.052	.046
NQ8B6	MDMA	.045	.048
NQ8B2	Hallucinogens	.088	.088
NQ8B5	Inhalants	.046	.045
NQ8B4	Opiates	.071	.074
NQ8A8	Methamphetamines	.042	.035
NQ8A7	Cocaine	.054	.054
NQ8B3	Anabolic steroids	.067	.075
NQ8B8	Other illegal drugs	.054	.063
NQ8B1	Sedatives	.027	.029
NQ8A9	Other amphetamines	-.010	-.017
NQ8A4	Smokeless tobacco	.222	.219

10B.	<i>Moderately Used Drugs:</i>	Gender Spring 2009	Gender Spring 2010
NQA5	Alcohol	.060	.048
NQA6	Marijuana	.064	.071
NQA1	Cigarettes	.052	.063
NQA3	Cigars	.202	.206
NQA2	Tobacco from hookah	.077	.084

11B.	<i>Perception Rarely/infrequently Used Drugs:</i>	Gender Spring 2009	Gender Spring 2010
NQ9B4	Opiates	-.050	-.046
NQ9B7	Other club drugs	-.051	-.049
NQ9B2	Hallucinogens	-.051	-.049
NQ9B5	Inhalants	-.061	-.057
NQ9B6	MDMA	-.045	-.041
NQ9B8	Other illegal drugs	-.059	-.056
NQ9B3	Anabolic Steroids	-.067	-.063
NQ9A8	Methamphetamine	-.061	-.059
NQ9B1	Sedatives	-.080	-.074
NQ9A7	Cocaine	-.065	-.061
NQ9A9	Other amphetamines	-.105	-.103

12B.	<i>Perception Moderately Used Drugs:</i>	Gender Spring 2009	Gender Spring 2010
NQ9A3	Cigars	-.034	-.026
NQ9A1	Cigarettes	-.100	-.088
NQ9A6	Marijuana	-.073	-.063
NQ9A2	Tobacco from a hookah	-.061	-.054
NQ9A5	Alcohol	-.072	-.071
NQ9A4	Smokeless Tobacco	-.011	-.019

13B.	<i>Party drinking:</i>	Gender Spring 2009	Gender Spring 2010
NQ10	Number of drinks last time partied/socialized	.124	.117
NQ13	Last 2 weeks 5 or more drinks at a sitting	.109	.095
NQ11	Hours drinking last time partied /socialized	.020	.018

14B.	<i>Drinking and driving:</i>	Gender Spring 2009	Gender Spring 2010
NQ14A	Last 30 days drive after drinking any alcohol	.021	.031
NQ14B	Last 30 days drive after having 5 or more drinks	.008	.017

15B.	<i>Protective Behaviors While Drinking:</i>	Gender Spring 2009	Gender Spring 2010
NQ15I	Stay with the same group of friends while drinking	-.129	-.111
NQ15E	Eat before/during while drinking	-.058	-.057
NQ15G	Keep track of how many drinks	-.092	-.078
NQ15J	Stick with only one kind of alcohol	-.064	-.064
NQ15H	Pace drinks to 1 or less per hour	-.126	-.112
NQ15D	Determine in advance not exceed number of drinks	-.086	-.079
NQ15K	Use a designated driver	-.091	-.086
NQ15A	Alternate non-alcoholic with alcohol drinks	-.091	-.076
NQ15B	Avoid drinking games	-.079	-.077
NQ15F	Have a friend let you know have had enough	-.105	-.096
NQ15C	Chose not to drink alcohol	-.109	-.098

16B.	<i>Consequences of Drinking:</i>	Gender Spring 2009	Gender Spring 2010
NQ16E	Had sex without getting consent	-.011	-.005
NQ16D	Had sex without giving consent	-.017	-.011
NQ16I	Seriously considered suicide	-.012	-.006
NQ16H	Physically injured other	.003	.010
NQ16C	Got in trouble with police	.009	.010
NQ16G	Physically injured self	.005	.008
NQ16F	Had unprotected sex	.009	.010
NQ16B	Forgot where/what you did	.013	.011
NQ16A	Did something later regretted	.000	-.004

17B.	<i>Taken Un-prescribed Drugs:</i>	Gender Spring 2009	Gender Spring 2010
NQ18D	Sedatives	.016	.014
NQ18A	Antidepressants	-.018	-.020
NQ18B	Erectile dysfunction	.030	.032
NQ18C	Pain killers	.032	.038
NQ18E	Stimulants	.037	.030

18B.	<i>Mental Health:</i>	Gender Spring 2009	Gender Spring 2010
NQ30F	Felt so depressed difficult to function	-.075	-.079
NQ30G	Felt overwhelming anxiety	-.124	-.129
NQ30E	Felt very sad	-.118	-.114
NQ30H	Felt overwhelming anger	-.044	-.043
NQ30A	Felt things were hopeless	-.101	-.100
NQ30D	Felt very lonely	-.100	-.092

19B.	<i>Mental Health Harm:</i>	Gender Spring 2009	Gender Spring 2010
NQ30J	Seriously considered suicide	-.028	-.029
NQ30K	Ever attempted suicide	-.034	-.035
NQ30I	Intentionally injured self	-.067	-.068

20B.	<i>Mental Health Overwhelmed/ Exhausted:</i>	Gender Spring 2009	Gender Spring 2010
NQ30B	Felt overwhelmed	-.063	-.057
NQ30C	Felt exhausted	-.082	-.074
21B.	<i>Diagnosed Anxiety/Depression:</i>	Gender Spring 2009	Gender Spring 2010
NQ31A2	Diagnosed Anxiety	-.100	-.104
NQ31B2	Diagnosed Panic Attacks	-.079	-.082
NQ31A6	Diagnosed Depression	-.091	-.085

22B.	<i>Diagnosed Other Mental Health Difficulties:</i>	Gender Spring 2009	Gender Spring 2010
NQ31A4	Diagnosed bipolar disorder	-.008	-.007
NQ31A7	Diagnosed insomnia	-.033	-.031
NQ31A8	Diagnosed other sleep disorder	-.006	-.008
NQ31B7	Diagnosed other mental health condition	-.019	-.015
NQ31A3	Diagnosed ADHD	.018	.016
NQ31B5	Substance abuse/addiction	.031	.024

23B.	<i>Diagnosed Substance Abuse/Schizophrenia:</i>	Gender Spring 2009	Gender Spring 2010
NQ31B3	Diagnosed phobia	-.016	-.017
NQ31B4	Diagnosed schizophrenia	.027	.026
NQ31B6	Diagnosed other addiction	.032	.028
NQ31B1	Diagnosed obsessive compulsive disorder	-.021	-.023

24B.	<i>Diagnosed Eating Disorder:</i>	Gender Spring 2009	Gender Spring 2010
NQ31A1	Diagnosed Anorexia	-.040	-.035
NQ31A5	Diagnosed Bulimia	-.037	-.033

25B.	<i>Interpersonal Difficulties:</i>	Gender Spring 2009	Gender Spring 2010
NQ33I	Personal appearance	-.133	-.144
NQ33F	Other relationships	-.087	-.094
NQ33A	Academics	-.082	-.088
NQ33J	Personal health issues	-.102	-.098
NQ33K	Sleep difficulties	-.048	-.044
NQ33G	Finances	-.071	-.069
NQ33B	Career related issues	-.032	-.030
NQ33E	Intimate relations	-.063	-.068
NQ33L	Other	-.030	-.026

26B.	<i>Family Difficulties:</i>	Gender Spring 2009	Gender Spring 2010
NQ33C	Death of family member/friend	-.067	-.069
NQ33H	Health problems of family member/partner	-.086	-.084
NQ33D	Family problems	-.124	-.122

27B.	<i>Diagnosed/Treated STI:</i>	Gender Spring 2009	Gender Spring 2010
NQ41A12	Gonorrhea	.017	.018
NQ41A13	Hepatitis B or C	.019	.017
NQ41A10	Genital herpes	-.020	-.021
NQ41A6	Chlamydia	-.011	-.013
NQ41A11	Genital warts/HPV	-.062	-.058
NQ41A9	Endometriosis	-.047	-.045

28B.	<i>Diagnosed/Treated Chronic Disease:</i>	Gender Spring 2009	Gender Spring 2010
NQ41B7	Pelvic inflammatory disease	-.007	-.006
NQ41B11	Tuberculosis	.008	.013
NQ41B3	HIV	.017	.019

29B.	<i>Diagnosed Treated-Upper Respiratory:</i>	Gender Spring 2009	Gender Spring 2010
NQ41B10	Strep Throat	-.067	-.061
NQ41B9	Sinus Infection	-.107	-.122
NQ41A8	Ear Infection	-.053	-.057
NQ41A5	Bronchitis	-.055	-.062

30B.	<i>Diagnosed Treated Asthma/Allergies:</i>	Gender Spring 2009	Gender Spring 2010
NQ41A2	Asthma	-.056	-.052
NQ41A1	Allergies	-.057	-.063

31B.	<i>Diagnosed Treated High blood Pressure/High Cholesterol:</i>	Gender Spring 2009	Gender Spring 2010
NQ41B1	High Blood Pressure	.052	.053
NQ41B2	High Cholesterol	.009	.013

32B.	<i>Diagnosed Treated Urinary Track Infection Migraines/Irritable Bowl Syndrome:</i>	Gender Spring 2009	Gender Spring 2010
NQ41B12	Urinary Track Infection	-.214	-.221
NQ41B5	Migraines	-.112	-.114
NQ41B4	Irritable Bowl Syndrome	-.057	-.047

33B.	<i>Diagnosed Treated Broken Bone/Back Pain/Repetitive Stress Injury:</i>	Gender Spring 2009	Gender Spring 2010
NQ41A4	Broken Bone/Sprain	.040	.036
NQ41A3	Back Pain	-.044	-.050
NQ41B8	Repetitive Stress Injury	-.037	-.029

34B.	<i>Academic-Interpersonal Difficulties:</i>	Gender Spring 2009	Gender Spring 2010
NQ45D5	Stress	-.154	-.149
NQ45A3	Anxiety	-.125	-.126
NQ45D4	Sleep difficulties	-.069	-.065
NQ45B4	Depression	-.058	-.055
NQ45D6	Work	-.072	-.062
NQ44B8	Finances	-.050	-.045
NQ44C8	Relationship difficulties	-.064	-.063

35B.	<i>Academic-Victimization and other physical stressors:</i>	Gender Spring 2009	Gender Spring 2010
NQ45A4	Physical assault	.027	.029
NQ45D2	STD/I	-.012	-.007
NQ45A5	Sexual assault	-.024	-.019
NQ45C1	Gambling	.149	.141
NQ45C7	Pregnancy	.019	.011
NQ45B5	Discrimination	.020	.031
NQ45B7	Eating disorder/problem	-.062	-.050
NQ45D7	Other	.011	.019

36B.	<i>Academic-Extracurricular Difficulties:</i>	Gender Spring 2009	Gender Spring 2010
NQ45C6	Participation extracurricular activities	-.009	-.016
NQ45C4	Internet use/computer games	.076	.079
NQ45C2	Homesickness	-.131	-.124
NQ45D1	Room difficulties	-.086	-.074

37B.	<i>Academic-Sickness Difficulties:</i>	Gender Spring 2009	Gender Spring 2010
NQ45A7	Cold/flu/sore throat	-.131	-.131
NQ46D3	Sinus infection/ear infection/strep throat	-.117	-.118
NQ45A2	Allergies	-.042	-.041

38B.	<i>Academic-Chronic Difficulties:</i>	Gender Spring 2009	Gender Spring 2010
NQ45B2	Chronic pain	-.041	-.041
NQ45B1	Chronic health problem	-.066	-.066
NQ45C3	Injury	.032	.032

39B.	<i>Academic-Learning Disability:</i>	Gender Spring 2009	Gender Spring 2010
NQ45A6	ADHD	.046	.041
NQ45C5	Learning disability	.028	.023

40B.	<i>Academic-Family Concerns:</i>	Gender Spring 2009	Gender Spring 2010
NQ45B3	Death Family member/friend	-.056	-.057
NQ45A8	Concern family member/friend	-.130	-.123

41B.	<i>Academic-Risky Behavior:</i>	Gender Spring 2009	Gender Spring 2010
NQ45A1	Alcohol use	.050	.046
NQ45B6	Drug use	.101	.110

42B.	<i>Physical Disability:</i>	Gender Spring 2009	Gender Spring 2010
NQ65F	Partially Sighted/Blind	.005	.013
NQ65C	Deaf/hard of hearing	.017	.018
NQ65H	Speech or language disorder	.030	.021

43B.	<i>Learning Disability:</i>	Gender Spring 2009	Gender Spring 2010
NQ65A	ADHD	.046	.042
NQ65D	Learning Disability	.005	.000

44B.	<i>Chronic Disability:</i>	Gender Spring 2009	Gender Spring 2010
NQ65B	Chronic Illness	-.053	-.055
NQ65E	Mobility Disability	.011	.011
NQ65I	Other Disability	.003	.001
NQ65G	Psychiatric condition	-.051	-.047

45B.	<i>Exercise Guidelines:</i>	Gender Spring 2009	Gender Spring 2010
NQ29A	7 days Moderate Exercise 30 minutes	.022	.028
NQ29B	7 days Vigorous Exercise 20 minutes	.080	.084
NQ29C	7 days Strengthen Muscles 8-12 repetitions	.135	.143
PAREQ	Physical Activities Guidelines Met	.062	.061

46B.	<i>Sexual Activity:</i>	Gender Spring 2009	Gender Spring 2010
NQ21B	Last 30 days: Vaginal Intercourse	-.047	-.024
NQ24	Last 12 months: Used emergency contraception	-.014	.015
NQ21A	Last 30 days: Oral sex	.010	.022
NQ22B	Last 30 days: Condom/barrier vaginal intercourse	-.018	.007
NQ25	Last 12 months: You/partner became pregnant	-.019	.011
NQ22A	Last 30 days: Condom/barrier oral sex	.017	.035
NQ19	Last 12 months: Number of sexual partners	.029	.031

47B.	<i>Diagnosed/treated STI:</i>	Gender Spring 2009	Gender Spring 2010
NQ41A12	Last 12 months: Diagnosed/treated Gonorrhea	.017	.011
NQ41B3	Last 12 months: Diagnosed/treated HIV	.017	.021
NQ41B7	Last 12 months: Diagnosed treated Pelvic inflammatory disease sex	-.007	.009
NQ41A6	Last 12 months: Chlamydia	-.011	-.016
NQ41A10	Last 12 months: Diagnosed/treated Genital Herpes	-.020	-.016
NQ41A11	Last 12 months: Diagnosed /treated Genital warts/HPV	-.062	-.042

48B.	<i>Anal Sexual Activity:</i>	Gender Spring 2009	Gender Spring 2010
NQ22C	Last 30 days: Condom/barrier during anal intercourse	.065	.066
NQ21C	Last 30 days: Anal intercourse	.060	.059

Measurement Validity

Wechsler and colleagues performed a number of analyses in their 2000 publication¹¹. Table 8 is an analysis using Logistic Regression³ in which the primary coefficient of interest is the Odds Ratio. As an example, an Odds Ratio of 5 would indicate that Occasional Risky Drinkers are 4.70 times more likely to “miss a class”, as an example, compared with Non Risky Drinkers. What makes the analyses more powerful is that age, sex, marital status, race/ethnicity, and parental college education are also in the equation to adjust for the demographic variation. The ACHA-NCHA has all the control or predictor variables that Wechsler used except for parental college education. Please note that 26 logistic regressions are performed and the primary focus is to compare the direction and magnitude of the odds ratio between the two studies across all variables. Table 2C presents just the Odds Ratios for the CAS, ACHA-NCHA Pilot Spring 1999, ACHA-NCHA Pilot Fall 1999, ACHA-NCHA Spring 2000, ACHA-NCHA II Pilot Spring 2007 and ACHA-NCHA II Pilot Spring 2008. The ACHA-NCHA Spring 2000 as well as the ACHA-NCHA II Pilots do not contain all of the original Consequence items as the CAS and the original ACHA-NCHA Pilots thus those Odds Ratios can not be

generated. The full Tables for ACHA-NCHA 1999 Pilots and the ACHA-NCHA Spring 2000 are presented in the original ACHA-NCHA Reliability and Validity Analyses. A copy can be requested by contacting E. Victor Leino, Ph.D. at vleino@acha.org.

Table 1C: Wechsler H. Lee, JE, Kuo M, Lee H. College Binge Drinking in the 1990s: A Continuing Problem. Results of the Harvard School of Public Health 1999 College Alcohol Study. J. Am Coll Health. 2000; 48: 199-210.

Table 8 Risk of Alcohol-Related Problems Among Students in Different Binge Drinking Categories, 1999							
Problem	Nonbinge Drinkers (n = 5063)	Occasional binge drinkers (n = 2962)		Frequent binge drinkers (n = 3135)			
	%	%	Adjusted OR	95% CI	%	Adjusted OR	95% CI
Miss a class	8.8	30.9	4.70	4.01, 5.51	62.5	16.86	14.40, 19.80
Get behind school work	9.8	26.0	3.17	2.70, 3.72	46.3	7.94	6.81, 9.28
Do something Regret	18.0	39.6	2.85	2.50, 3.25	62.0	6.94	6.08, 7.93
Forget Where You Were or did	10.0	27.2	2.82	2.41, 3.29	54.0	8.36	7.22, 9.71
Argue with friends	9.7	23.0	2.68	2.28, 3.14	42.6	6.24	5.37, 7.26
Engage in unplanned sexual activity	7.8	22.3	3.17	2.68, 3.76	41.5	7.04	6.00, 8.28
Not use protection when you had sex	3.7	9.8	2.88	2.29, 3.64	20.4	6.13	4.95, 7.63
Damage property	2.3	8.9	2.92	2.20, 3.90	22.7	9.75	7.57, 12.72
Get in Trouble with campus or local police	1.4	5.2	3.00	2.08, 4.39	12.7	8.07	5.84, 11.40
Get hurt or injured	3.9	10.9	2.67	2.10, 3.39	26.6	8.16	6.60, 10.16
Require medical treatment for alcohol overdose	.3	.8	2.73	1.17, 6.73	0.9	3.40	1.42, 8.72
Drove after drinking alcohol	18.6	39.7	2.87	2.53, 3.27	56.7	7.64	6.75, 8.66
Have five or more different alcohol related problems	3.5	16.6	4.59	3.69, 5.74	48.0	21.11	17.25, 26.04

Note. Only students who drank alcohol in the past year are included. Problems did not occur at all or occurred one or more times. Sample sizes vary slightly for each category because of missing values. OR = odds ratio; CI = confidence interval. Adjusted ORs of occasional binge drinkers v nonbinge drinkers are significant at p <.001 (OR adjusted for age, marital status, race/ethnicity, and parental education). Adjusted ORs of frequent binge drinkers v nonbinge drinkers are significant at p, .001 (OR adjusted for age, sex, marital status, race/ethnicity, and parental college education). Vol 48, March 2000.

Table 2C ADJUSTED ODDS RATIOS

Non Risky Drinkers (Non Binge Drinkers) vs. Occasional Risky Drinkers (Occasional Binge Drinkers)

Problem Last 12 Months	CAS 1999 (N=8,025)	NCHA Pilot Spring 1999 (N=3,531)	NCHA Pilot Fall 1999 (N=3,641)	NCHA Spring 2000 (N=16,024)	NCHA II Spring 2009 (N=87,105)	NCHA II Spring 2010 (N=95,712)
Miss a class	4.70	4.87	3.27			
Get behind school work	3.17	3.72	2.67			
Do something Regret	2.85	3.23	2.43	2.77	2.73	2.89
Forget Where You Were or did	2.82	3.69	3.09	3.65	3.65	3.75
Argue with friends	2.68	2.77	2.39			
Engage in unplanned sexual activity	3.17	3.36	2.10			
Not use protection when you had sex	2.88	3.17	2.35	2.89	2.62	2.60
Damage property	2.92	3.78	3.41			
Get in Trouble with campus or local police	3.00	3.21	3.73		2.48	2.20
Get hurt or injured	2.67	3.71	3.32	3.42	2.96	3.07
Require medical treatment for alcohol overdose	2.73	1.33 NS	2.32 NS			
Drove after drinking alcohol	2.87	2.69	2.06			
Have five or more different alcohol related problems	4.59	5.92	4.16		4.03	3.18

Table 3C ADJUSTED ODDS RATIOS

NON RISKY DRINKERS (NON BINGE DRINKERS) vs. FREQUENT RISKY DRINKERS (FREQUENT BINGE DRINKERS)

Problem Last 12 Months	CAS 1999 (N=8,025)	NCHA Pilot Spring 1999 (N=3,531)	NCHA Pilot Fall 1999 (N=3,641)	NCHA Spring 2000 (N=16,024)	NCHA II Spring 2009 (N=87,105)	NCHA II Spring 2010 (N=95,712)
Miss a class	16.86	18.99	8.62			
Get behind school work	7.94	10.30	7.47			
Do something Regret	6.94	8.07	5.71	6.53	5.64	5.67
Forget Where You Were or did	8.36	11.27	8.14	9.91	9.83	9.93
Argue with friends	6.24	7.10	6.35			
Engage in unplanned sexual activity	7.04	7.69	5.24			
Not use protection when you had sex	6.13	7.69	6.83	6.38	5.84	5.62
Damage property	9.75	13.67	10.05			
Get in Trouble with campus or local police	8.07	6.61	7.66		5.24	5.04
Get hurt or injured	8.16	10.55	8.64	10.07	7.25	7.19
Require medical treatment for alcohol overdose	3.40	5.03	4.19			
Drove after drinking alcohol	7.64	2.87	1.78			
Have five or more different alcohol related problems	21.11	26.01				

DISCUSSION

A concerted effort was made by ACHA-NCHA Advisory Committee to develop a revised survey that reflects emerging issues in college health. These efforts included weekly conference calls as well as two face to face meetings held in Baltimore at the ACHA home office. Also Focus group evaluation of ACHA-NCHA II was conducted with students at University of Maryland College Park. After the first pilot it was felt that a second one needed to be conducted with the addition of some survey items. With two pilot data collection periods allows a comparative evaluation of survey results. Additionally each pilot randomly selected students to take the ACHA-NCHA or the ACHA-NCHA II. Evaluation of original survey responses compared with revised survey showed significant differences but small effect sizes demonstrating that the significant differences were do to sample sizes rather than actual differences. The results presented in this Reliability and Validity Analyses used Spring 2009 and Spring 2010 data collection periods rather than the pilot data.

Reliability analyses demonstrates moderate to strong results in the evaluation of grouped or scaled items. Repeated reliability analyses demonstrated strong consistency over the two survey periods. The results of the Principal Component analyses and Reliability analyses also lend guidance to researchers who wish to conduct hypothesis testing using scales rather than individual items. Although there are no strict rules as to what is considered an acceptable Standardized Alpha anything over a .7 is considered reasonable for forming a scale.³ Standardized Alphas over .8 are considered strong. Regarding the average inter-item correlation, coefficients of .4 or larger show that there are fairly strong relationships between the group of items and that the group of items could be used in hypotheses testing.

The construct validity analyses shows consistency over two survey periods with different colleges/universities. Overall there was consistency in magnitude and direction of the Kendall's tau b. In the cases where the tau b is very small sometimes the direction can fluctuate but it is less meaningful because the tau b is so small.

Overall it appears that the ACHA-NCHA II is both reliable and valid. Not every item in the survey was analyzed nor necessarily appropriate for scaling especially single stand alone items but a majority of items were systematically evaluated.

As can be seen in Table 2C there is consistency in direction and magnitude between the nationally representative CAS and the 3 versions of the ACHA-NCHA measurements and 5 separate ACHA-NCHA measurement periods. The Odds Ratios are all statistically significant except where noted by NS. As would be predicted, the Odds Ratios are all larger in Table 3C where the comparison is Non Risky Drinker versus Frequent Risky Drinker. It was not expected that the Odds Ratios would be exact across all measurement periods and surveys but it is clear that there is measurement validity by evaluating the pattern of results.

References

1. Nunnally, J.C. (1978) *Psychometric Theory* 2nd ed. New York: McGraw Hill.
2. *SPSS Version 15 for Windows*. Family. Chicago, IL: SPSS Incorporated; 2007.
3. Neuman, W. L. *Social Research Methods: Qualitative and Quantitative Approaches*, Allyn and Bacon. 1997.
4. Wechsler H. *College Alcohol Study*. Harvard School of Public Health, Boston, MA., 1997.
5. Wechsler H. Lee, JE, Kuo M, Lee H. College Binge Drinking in the 1990s: A Continuing Problem. Results of the Harvard school of Public Health 1999 College Alcohol Study. *J. Am Coll Health*. 2000;48:199-210.
6. Johnston, L.D., O'Malley, P.M., Bachman, J.G., Schulenberg, J.E. (2009) *Monitoring the Future: National Survey Results on Drug Use, 1975-2008*. Volume II *College Students and Adults Ages 19-50*. (NIH Publication No. 09-7403). Bethesda, MD: National Institute on Drug Abuse.