Reliability and Validity of the Health Efficacy Scale for College Students

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Abstract

The 16-item Health-Efficacy Scale for College Students (HESCS) assesses an individual's belief in their capacity to change their own health. This investigation examined the psychometric properties of the HESCS by examining reliability and validity with a sample of 104 psychology students at a small University in northern California. Reliability was examined by utilizing internal consistency and test-retest. Validity was examined by using convergent and discriminant validity. The HESCS was found to be a reliable measure with an internal consistency reliability $r_{\alpha} = .82$. Further bivariate and multivariate analysis supported the validity of the scale. Taken together, the results of this data support the reliability and validity of the HESCS.

Keywords: Self-efficacy, health behaviors, scale development, health psychology

Reliability and Validity of the Health-Efficacy Scale for College Students

Self-Efficacy is an important concept both theoretically and in its application for promoting health-conscious behaviors and for preventing disease and illness. A central component of Albert Bandura's social learning theory (1977, 1982, 1986), self-efficacy refers to an individual's belief in their own ability to perform a specific behavior successfully. Self-efficacy has been related to setting and accomplishing goals, and persevering in the face of adversity. Individuals with strong self-efficacy see tasks in life to be challenges rather than obstacles and have a better outlook on life and experience less stress (Bandura, 2006). Studies have demonstrated that preventive self-efficacy is an individual's perceptions of his or her ability to perform specific health behaviors, and greatly influences actual health behavior and health status. Individuals with high perceived self-efficacy tend to be sick less often, experience less depression, and recover from injury and illness faster than individuals with low perceived self-efficacy (Bandura 1986, 1992; Gecas 1989). Individuals with high self-efficacy are more likely to acquire and maintain healthy behaviors (such as attending a gym regularly, reducing their fat intake), control their unhealthy behaviors (such as restricting their caloric intake, watching less tv), and to stop a unhealthy behavior (such as over-eating, binge-drinking) (Bandura, 1992).

For the purposes of this paper, self-efficacy of health behaviors shall be referred to as health-efficacy. Individuals with high health-efficacy tend to be more likely to exercise more, seek preventative care, over-come addiction to tobacco and alcohol, and to rate their own health as higher than individuals with low health-efficacy (Grembowski et al. 1993, O'Leary 1985). Theoretically, when an individual's perception of their ability to perform health behaviors is high, they are more likely to be successful in changing their unhealthy behaviors.

According to Albert Bandura's social learning theory (1977, 1982, 1986), self-efficacy's role in health behavior change and maintenance is a function of two beliefs – efficacy expectation and outcome expectations. Efficacy expectations, also known as "perceived self-efficacy", is the judgment of an individual's capacity to perform a particular task successfully. Outcome expectations is the individual's belief that their behavior will indeed lead to a desired outcome.

Efficacy expectations influence every aspect of an individual and their behavior. People tend to choose tasks which they judge themselves as capable of handling while avoiding those they believe are beyond their capabilities. Self-efficacy influences the amount of effort an individual will expend to change a behavior and the resiliency of the changed behavior in the face of obstacles (Bandura, 1982).

Outcome expectancy influences an individual's efficacy in behavior change, as changing health behaviors can at first appear daunting or too simplistic. If a simple change to a persons health-related behaviors is needed and the individual is uncertain, the initial motivation to change the behavior may rest primarily upon the outcome expectations. While if a new health behavior is difficult to implement with uncertain outcomes, both efficacy and outcome expectancies may be instrumental in successful behavioral change (Gecas 1989, Stretcher el al. 1986).

Self-efficacy is not a global trait or personality characteristic as an individual's expectations can vary across behaviors, situations, and contexts (Bandura, 1997). For example, a student may have high self-efficacy for attending exercise classes, while simultaneously having low self-efficacy to stop smoking tobacco. Thus self-efficacy should be viewed in the context of specific domains or behaviors.

Self-efficacy can be affected by an individual's experiences and Bandura identified four area's in which people acquire efficacy. Performance Accomplishments are acquired by an individual learning through their own personal experiences, such as when a person changes their dieting and successfully lowers their sodium intake. Vicarious experiences is when a person see's another person attempt a behavior or task and succeeds, these experiences are even more impactful when the observed individual is similar to the observer. Verbal persuasion is when an individual receives information from other's about their own abilities, such as when a person looses weight and is then told so by their peers. The fourth area is emotional arousal as people rely on their physiological state to judge vulnerability to stress and anxiety. As high states of arousal typically reduce performance, people are more likely to expect success when they experience less aversive arousal (Bandura, 1977).

When tackling the issue of healthy living, doctors and health experts have generally emphasized lifestyle and dietary changes including weight loss/control, physical exercise, minimal alcohol consumption, and to not smoke. These programs have had small to modest success rates rangings from 8% to 40%. To increase the impact of such preventative programs, there has been growing interest in the role of self-efficacy in behavioral change (Birkett & Hotz, 1993). Self-efficacy can be seen as an internal motivator for behavioral change as individuals with high self-efficacy are more likely to implement and maintain a new behavior without the need for continual education, training, and check-ups.

To assess the construct of health-efficacy we examined it through the perspective of three domains. The domain of physical activity refers to the participant's ability and willingness to engage in regular physical activity. Health-conscious eating refers to the participants understanding of the food they eat and frequency of eating both healthy and unhealthy food. The

third domain of self-efficacy for change refers to the participant's belief in their own capacity to successfully execute a health behavior change in their life (Birkett & Hotz, 1993).

The goal of this study was to determine the validity and reliability of the Health-Efficacy Scale for College Students in determining an individual's self-efficacy of health behaviors at the time of administration. That individual's with high self-efficacy have a strong sense of their ability to change their own health. This was done by developing a scale for measuring health-efficacy, conducting reliability, validity, item analysis, factor analysis, and testing the primary hypothesis that the HESCS is able to predict health specific self-efficacy in participants.

Method

Participants

The sample of participants consists of male and female college students from Psychological Tests & Measures, and Introduction to Psychological Research Design & Methodologies classes at Humboldt State University in northern California. 104 university students participated in the study by filling out a survey. The sample consisted primarily of women with 24% of participants being male. Ethnic demographics were not recorded, but we could expect approximately 3% of the participants were African-American, 1,4% Native-American, 3% Asian-American, 22.2% Hispanic/Latino, and 52.6% white based the university statistics. Similarly, age was not reordered, but approximately 28% of the participants in the study were 20 years of age or younger, 52% were between the ages of 20 and 24, and 20% of the participants were 25 or older (Humboldt State University Fast Facts, 2012). 18% of our participants were found to be dieting at the time of administration, and the mean grade point average (GPA) of participants was found to be 3.07 with a standard deviation of .60.

Instrumentation

The Health-Specific Self-Efficacy Scales (HSSES, Schwarzer & Renner, 2009) was used to assess an individual's self-belief of their capacity to resist temptations and adopt a healthy lifestyle. The measure contained three subscales of preventative nutrition, physical exercise, and alcohol resistance self-efficacy. The scale consisted of 13 items on a 4-point Likert-type scale rating their frequency ranging from 1 ("very uncertain") to 4 ("very certain"), with an alpha = .87 for preventative nutrition, alpha = .88 for physical exercise, and alpha = .79 for alcohol resistance subscales (Schwarzer & Renner, 2009).

The General Self-Efficacy Scale (GSES, Schwarzer & Jerusalem, 1995) is a measure used to assess a person's general sense of perceived self-efficacy. It has been found to be suitable for many applications such as predicting adaptations after life changes, but is not suitable as an indicator of quality of life. The measure consists of 10 items on a 4-point Likert-type scale rating their frequency from 1 ("Not true at all") to 4 ("Exactly true"). With samples from 23 nations, the scale exhibits Cronbach alphas from .76 to .90 with the majority ranging in the high .8's (Schwarzer & Jerusalem, 1995).

The Humor Styles Questionnaire (HSQ, Martin, Puhlik-Doris, Larsen, Gray, & Weir, 2003) is a measure used to help understand an individual's psychological well-being by assessing the forms of humor which may be deleterious or beneficial to their health. The measure consisted of 25-items on a 7-point Likert-type scale rating their frequency from 1 ("Totally disagree") to 7 ("Totally agree"). Cronbach alpha's range from .82 to .88 (Martin et al., 2003).

Procedure

The questionnaire was administered during psychology classes in a packet containing every questionnaire from each research group in the Psychological Tests & Measures class. Sampling was done at Humboldt State University out of convenience. Prior to completing the measures, all subjects completed a consent form, were monitored during the administration of the surveys, and at the end of their participation all participants were debriefed.

Students from Introduction to Psychological Research Design & Methods received extra-credit for their participation in the study. Students from Psychological Tests & Measures received standard lab-credit for their participation. The surveys were designed to take approximately one hour to fill out.

Data Analysis

Most of the surveys were filled out with minimal missing data as they were positioned in the middle of the survey packet. The missing values were missing at random as only certain questions were not filled out. Missing data was treated by use of mean imputation. Three cases were removed for not filling out enough information or filling out the surveys in a distinctly dishonest pattern. All of the data was compared using mahalanobis values and two cases was removed for being a multivariate outlier and skewing the data.

To examine the reliability of the HESCS both internal consistency and test-retest were utilized. Internal consistency was examined using Cronbach's alpha coefficient. Test-retest was investigated by utilization of a paired-samples t-Test of the total scores of the initial test with the total scores of the retest.

The issue of validity of the HESCS was investigated after totaling the scores for the HESCS, General Self-Efficacy Scale, Health-Specific Self-Efficacy Scales, and Humor Styles

Questionnaire. Pearson correlations were ran with HESCS against each of the validity scales to determine if a relationship existed.

To further examine validity and understand how the General Self-Efficacy Scale and Health-Specific Self-Efficacy Scales could predict Health-Efficacy from the HESCS a hierarchical multiple regression was utilized. This involved using the HESCS as the dependent variable and the General Self-Efficacy Scale as the predictor in the first model, with Health-Specific Self-Efficacy Scales as a predictor in the second model, and Humor Styles Questionnaire as a predictor in the third model.

To explore the relationship between male and female health-efficacy an independent-samples t-Test was used on the HESCS. Exploration of the health-efficacy differences between individuals dieting with those who are not dieting was done by use of an independent samples t-test. Examination of the difference in health-efficacy and college-level class-standing was done by one-way ANOVA.

Investigation of the differences in test-retest reliabilities between males and females was done using a paired-samples t-test. SPSS was instructed to select cases for only the gender in question.

Results

Reliability

Internal consistency reliability (r_{α}) of the HESCS was found to be good at .82. To examine test-retest reliability a small subsample of 20 participants were re-administered the survey one week after completing the initial survey packet. The HESCS was found to have adequate test-retest reliability, $r_{tt} = .70$, $p < .001$. However men ($r_{tt} = .84$, $p = .07$) were found to have higher test-retest reliability than women, $r_{tt} = .66$, $p < .01$. There was also a significant

difference found between the test and retest (see Table 1). Due to the small sample size of the retest further research is needed.

Validity

The intercorrelations among the validity scales and HESCS along with their coefficient alpha reliabilities of the measures are presented in table 2.

Evidence for convergent validity was demonstrated for the HESCS by the moderate correlations with health-specific self-efficacy (r = .51) and with general self-efficacy (r = .40). Discriminant validity for the HESCS was demonstrated by the low correlation with the humor styles questionnaire (r = .28). The magnitude of the correlation between HESCS and GSES was slightly lower than correlation between HESCS and HSSES supporting that both health-efficacy and health-specific self-efficacy are both components of general self-efficacy. The magnitude of the correlation between HESCS and HSQ is in part due to the fact that the HSQ contains subscales for both beneficial and deleterious humor styles to people's health.

Item Analysis

Items removed from the initial item pool of the HESCS were done so on the basis of low (r_{it} < .3) item-total scale correlations, and to prevent redundancy by removing items with similar content and high interitem correlations r_{it} > .55. In doing so, the HESCS was paired down from 30-items to 16-items. In the context of this article, the HESCS shall refer to the 16-item final form of the Health-Efficacy Scale for College Students.

The item to total scale correlations for the original 30-item HESCS ranged from .05 to .55 with a median r_{it} of .28. The item to total scale correlations recomputed for the revised 16-item HESCS ranged from .36 to .58 with a median r_{it} of .39. See Appendix A for a copy of the original 30-item HESCS, and Appendix B for the 16-item final form.

Descriptive Characteristics of the Scale

The HESCS was designed using a Likert-type response scale with participants circling one of four answers (*strongly disagree, disagree, agree, strongly agree*) to each question. The response scale's physical item mean is 2.5, with a mean item response in our sample of 3.09. The scale is keyed such that a high score indicates high health-efficacy. The distribution of scores in our sample was very symmetrical with skewness of .13 (*SE* = .24) and kurtosis of .07 (*SE* = .48), along with a mean of 49.62 and median of 50.0. We found a moderate variability in the range of scores from 34 to 64, with a standard deviation of 6.06.

Women (*M* = 49.85, *SD* = 5.95) did not score differently than men (*M* = 49.09, *SD* = 6.59) on the HESCS, $t(90) = -.44$, $d = .10$, $p = .66$. No significant differences were found among freshman, sophomores, juniors, seniors, or graduate students on the HESCS, $F(5, 86) = .58$, $p = .72$, $\eta_p^2 = .03$. Participants dieting (*M* = 53.31, *SD* = 5.78) at the time of administration scored slightly higher than non-dieters (*M* = 48.86, *SD* = 5.97), $t(88) = 2.72$, $d = .76$, $p < .01$.

Secondary Analysis

A hierarchical multiple regression was conducted using the HESCS as the dependent variable against the criterion-related and convergent validity scales, $R^2 = .30$, $F(2,96) = 26.09$, $p < .001$. Both the General Self-Efficacy Scale ($b^* = .22$, $t(96) = 2.38$, $p < .02$) and the Health-Specific Self-Efficacy Scales ($b^* = .42$, $t(96) = 4.43$, $p < .001$) were significantly related to the HESCS, suggesting that each set of variables predicted health-efficacy in college students. When the discriminant validity scale was added to the model it yielded similar results, $R^2 = .31$, $F(3,95) = 26.05$, $p < .001$. Both the Health-Specific Self-Efficacy and General Self-Efficacy scales remained significantly related to the HESCS while the Humor Styles Questionnaire was

not, $b^* = .10$, $t(95) = 1.06$, $p = .29$. This provides further evidence of health-efficacy being a component of self-efficacy (see Table 3).

Factor Analysis

An exploratory factor analysis was conducted using principal component analysis of the 16-item Health-Efficacy Scale for College Students with varimax rotation producing a 4-factor solution which accounted for 57.50% of the total variance. The eigenvalues for these factors were 4.54, 2.33, 1.21, and 1.12. Examination of the Kaiser-Meyer Olkin measure of sampling adequacy suggested that the sample was factorable ($KMO = .74$). Due to the nature of the construct and examination of the scree plot, 3 factors were chosen accounting for 50.46% of the total variance. Tables 4 and 5 display the factor loadings and subscale reliabilities.

Discussion

Our examination was consistent with those of previous studies and provide additional support for Bandura's social learning theory and of self-efficacies influence on health behaviors. College students with high general self-efficacy were more likely to have high health-efficacy. The process of item selection and confirmatory analysis has established that our measure yields three independent variables each with adequate internal consistency. The factors relate to health-efficacy and should provide a measure of a person's self-perceived capability to initiate and maintain dietary change in regards to their health behaviors.

Limitations

There are issues with reliability and validity associated with health-appraisal self-reports (Kirscht 1989; Patrick & Beery 1991). Reliability was reinforced in this study by avoiding questions which required memory recall, such as cholesterol levels or blood pressure. Validity was reinforced by selecting measures already developed and tested for the same topics.

Our findings of the HESCS was tested on only psychology major college students who were predominantly female, Caucasian, and in their twenties. Therefore our results may not be generalizable to non-college students, and to college students above the age of 35. Furthermore, as our sample consisted of primarily female participants, warranting further testing for greater generalizability to men and more ethnicities. However, the participants in our study have characteristics similar to all college students, suggesting that our results may be applicable to a wide range of individuals.

Summary

Studies have demonstrated that interventions with self-efficacy enhancing components tend to yield higher levels of effectiveness than programs without such components. This result has been found across a wide range of health concerns including addiction, obesity, anxiety, dieting, and others (Contento & Murphy, 1990; Marlatt, 1985). Such studies have indicated that when self-efficacy is enhanced the treatment outcomes are more favorable.

Knowledge of self-efficacy can assist practitioners in implementing effective lifestyle changes in two ways: As a guide to the effective use of other interventions, and to be used as a point of intervention (Birkett & Hotz, 1993). By identifying individuals with low self-efficacy schools and health workers can start implementing self-efficacy enhancing treatments earlier with potentially more effectiveness.

The HESCS can also identify people with unreasonably high health-efficacy. These individuals may believe they can “stop anytime they want” but fail to recognize the unhealthy behaviors they exhibit. By failing to recognize that behavioral change is a complex and demanding task, individuals with unreasonably high health-efficacy can set themselves up for

future failure. Early intervention with appropriate counseling treatments can help such individuals in understanding that certain skills are necessary for effective lifestyle change.

Conclusion

The scale developed here could be used by school counselors and health workers dealing with predominantly white educated individuals in their twenties. Such individuals could be assisted in making small dietary and/or physical activity changes in their daily life. If small changes can be made and maintained, the individual's perception of their own abilities and capabilities to make changes in their own lives could be enhanced and further reinforced.

The topic of healthy lifestyles and behaviors is an increasingly researched topic in North America as we understand more of the fundamental underpinnings of dieting and health behaviors. Obesity in particular is a growing problem in this country with many associated diseases and illnesses, and has become one of the leading causes of death in America (Boughter, 2006). The ability to properly identify individuals with low or unreasonably high health-efficacy can help get people into the proper treatment programs sooner and make meaningful changes to their health behaviors.

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Table 1

Results of Test-Retest

Time	*M*	*SD*	*d*	$r_{Y\lambda}$	*t*(19)	*p*
Time1	51.81	5.21	0.48	.24	2.78	<.02
Time2	49.39	4.77				

Table 2

Intercorrelations Among Measures and Reliability

Measure	HESCS	HSSES	GSES	HSQ	PA	HCE	SEC
HESCS	(.82)	.51***	.40***	.28**	.74***	.76***	.80***
HSSES		(.84)	.43***	.39***	.56***	.24*	.36***
GSES			(.92)	.14	.36***	.29**	.27**
HSQ				(.61)	.18	.21*	.25*

Note. *** $p < .001$, ** $p < .01$, * $p < .05$. Values in parentheses are the internal consistency reliability coefficients found in the study. HESCS = Health-Efficacy Scale for College Students, HSSES = Health-Specific Self-Efficacy Scale, GSES = General Self-Efficacy Scale, HSQ = Humor Styles Questionnaire, PA = Physical Activity subscale of the HESCS, HCE = Health-Conscious Eating subscale of the HESCS, and SEC = Self-Efficacy of Change subscale of the HESCS.

Table 3

Final model predicting health-efficacy from validity measures.

Predictor	Range	*M (SD)*	*b**	sr^2
GSES	18 - 40	32.25 (5.12)	.23*	.04
R^2 *Change*			.16***	
HSSES	28 - 52	39.68 (6.19)	.38***	.10
R^2 *Change*			.14***	
HSQ	61 - 131	98.32 (12.19)	.10	.01
R^2 *Change*			.01	
R^2 *Model*			.31***	

Note. $n = 99$. *** $p < .001$, ** $p < .01$, * $p < .05$

Table 4

	Physical Activity	Health-Conscious Eating	Self-efficacy for change	Commonalities (h^2)
I can set challenging physical tasks for myself and complete them	**.65**			.44
I am confident I could get at least 30 minutes of physical exercise at least 3 times a week	**.73**			.56
I will continue to exercise even though my peers are too fast or too slow for me	**.68**			.51
I am confident I could make the time to continue my physical activities despite demands on my life	**.70**		.35	.63
I am confident I could increase my weekly level of physical activity if it improved my health	**.57**		.41	.50
I am confident I could change my diet to improve my health	**.60**			.4
I eat junk food almost daily		**.80**		.65
I usually eat food which is nutritious and healthy		**.61**		.45
I eat fruits and/or vegetables almost every day		**.55**	.44	.50
Most of the foods I enjoy eating are high in fat		**.79**		.63
I drink sweet carbonated drinks almost daily		**.62**		.41
I can resist eating convenient food which are high in fat and calories even though I am in a hurry		**.46**		.26
It makes me feel good to eat food that I know is healthy		.35	**.69**	.64
It makes me feel good to get physical exercise	.43		**.50**	.45
I can always change a situation which is bad for my health	.48	.36	**.32**	.46
I have less energy when I do not take care of my health			**.78**	.62
Eigenvalue	4.54	2.33	1.21	
Variance (%)	28.34	14.47	7.55	

Note. Prinicipal components analysis with varimax rotation. Factors explain 50.46%. Factor loadings < .3 are suppressed.

Table 5

*Descriptive statistics for the three HESCS factors (*n = *99).*

	No. of items	*M* (*SD*)	Skewness	Kurtosis	r_α
Physical Activity	6	18.88 (2.80)	.05	-.48	.78
Health-Conscious Eating	6	17.69 (3.20)	-.21	.01	.75
Self-Efficacy for Change	4	13.05 (1.96)	-.89	2.47	.71

Appendix A

Group 0 ID_____

Sex M_1 F_2 Year in School: $Fresh_1$ $Soph_2$ Jr_3 Sr_4 $Grad_5$ $Other_6$ GPA _____

Are You Currently Dieting? Yes_1 No_2

Directions:

Please circle the response which best represents your attitudes towards the question.

		Strongly Disagree	Disagree	Agree	Strongly Agree
1	I am willing to forgo pleasurable experiences if it will jeopardize my health	1	2	3	4
2	I can set challenging physical tasks for myself and complete them	1	2	3	4
3	I drink a lot of water almost every day	1	2	3	4
4	I eat junk food almost daily	1	2	3	4
5	I could be in better physical shape if I tried	1	2	3	4
6	It is hard for me to not smoke	1	2	3	4
7	I usually eat food which is nutritious and healthy	1	2	3	4
8	I am confident I could get at least 30 minutes of physical exercise at least 3 times a week	1	2	3	4
9	I eat when I am bored	1	2	3	4
10	I am confident that I could reduce my alcohol consumption	1	2	3	4
11	I eat fruits and/or vegetables almost every day	1	2	3	4
12	I can always change a situation which is bad for my health	1	2	3	4
13	In the past I engaged in more risky behaviors to my health than I do today	1	2	3	4
14	I eat when I am not hungry	1	2	3	4
15	I am able to keep up with my peers in physically demanding situations	1	2	3	4
16	I have been told that I eat too much	1	2	3	4
17	I will continue to exercise even though my peers are too fast or too slow for me	1	2	3	4
18	It makes me feel good to eat food that I know is healthy	1	2	3	4
19	I use recreational drugs on a regular basis	1	2	3	4
20	I am confident I could increase my weekly level of physical activity if it improved my health	1	2	3	4
21	Most of the foods I enjoy eating are high in fat	1	2	3	4
22	I am confident I could change my diet to improve my health	1	2	3	4
23	I drink sweet carbonated drinks almost daily	1	2	3	4
24	I can resist eating convenient food which are high in fat and calories even though I am in a hurry	1	2	3	4
25	I am confident I could make the time to continue my physical activities despite demands on my life	1	2	3	4
26	When I am with other people I allow myself to eat more than I know I should	1	2	3	4
27	I am confident that I could not over-drink alcohol at all	1	2	3	4
28	I have less energy when I do not take care of my health	1	2	3	4
29	It makes me feel good to get physical exercise	1	2	3	4
30	My peers eat mostly healthy food	1	2	3	4

Appendix B

Group 0 ID_____

Sex M_1 F_2 Year in School: $Fresh_1$ $Soph_2$ Jr_3 Sr_4 $Grad_5$ $Other_6$ GPA _____

Are You Currently Dieting? Yes_1 No_2

Directions:

Please circle the response which best represents your attitudes towards the question.

		Strongly Disagree	Disagree	Agree	Strongly Agree
1	I am willing to forgo pleasurable experiences if it will jeopardize my health	1	2	3	4
2	**I can set challenging physical tasks for myself and complete them**	**1**	**2**	**3**	**4**
3	I drink a lot of water almost every day	1	2	3	4
4	**I eat junk food almost daily***	**1**	**2**	**3**	**4**
5	I could be in better physical shape if I tried	1	2	3	4
6	It is hard for me to not smoke	1	2	3	4
7	**I usually eat food which is nutritious and healthy**	**1**	**2**	**3**	**4**
8	**I am confident I could get at least 30 minutes of physical exercise at least 3 times a week**	**1**	**2**	**3**	**4**
9	I eat when I am bored*	1	2	3	4
10	I am confident that I could reduce my alcohol consumption	1	2	3	4
11	**I eat fruits and/or vegetables almost every day**	**1**	**2**	**3**	**4**
12	**I can always change a situation which is bad for my health**	**1**	**2**	**3**	**4**
13	In the past I engaged in more risky behaviors to my health than I do today	1	2	3	4
14	I eat when I am not hungry*	1	2	3	4
15	I am able to keep up with my peers in physically demanding situations	1	2	3	4
16	I have been told that I eat too much	1	2	3	4
17	**I will continue to exercise even though my peers are too fast or too slow for me**	**1**	**2**	**3**	**4**
18	**It makes me feel good to eat food that I know is healthy**	**1**	**2**	**3**	**4**
19	I use recreational drugs on a regular basis*	1	2	3	4
20	**I am confident I could increase my weekly level of physical activity if it improved my health**	**1**	**2**	**3**	**4**
21	**Most of the foods I enjoy eating are high in fat***	**1**	**2**	**3**	**4**
22	**I am confident I could change my diet to improve my health**	**1**	**2**	**3**	**4**
23	**I drink sweet carbonated drinks almost daily***	**1**	**2**	**3**	**4**
24	**I can resist eating convenient food which are high in fat and calories even though I am in a hurry**	**1**	**2**	**3**	**4**
25	**I am confident I could make the time to continue my physical activities despite demands on my life**	**1**	**2**	**3**	**4**
26	When I am with other people I allow myself to eat more than I know I should*	1	2	3	4
27	I am confident that I could not over-drink alcohol at all	1	2	3	4
28	**I have less energy when I do not take care of my health**	**1**	**2**	**3**	**4**
29	**It makes me feel good to get physical exercise**	**1**	**2**	**3**	**4**
30	My peers eat mostly healthy food	1	2	3	4

Note: *Items were reverse keyed. **Bolded items were used in the final 16-item form.**