The Relationship Between Intuitive Eating and Health Indicators Among College Women

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ABSTRACT

Epidemic levels of obesity represent a growing public health problem associated with a variety of negative health outcomes. Population level interventions that aim to moderate obesigenic environments have been proposed but remain largely unimplemented. Standard individual level interventions that focus on dietary restraint have been ineffective and in some cases harmful. Intuitive eating, an anti-dieting strategy that relies on recognizing and responding to internal hunger and satiation cues, has been proposed as an alternative approach to healthy weight management at the individual level—but it remains largely untested. This study evaluated the relationship between intuitive eating and various health indicators among female college students. As measured by the Intuitive Eating Scale (IES), it was found that intuitive eating was significantly correlated with lower body mass index (r = -.576), lower triglyceride levels (r = -.408), higher levels of high density lipoproteins (.437), and improved cardiovascular risk (r = .425). Findings provide tentative support for intuitive eating as a positive approach to healthy weight management at the individual level. Implications and future research needs are discussed.

INTRODUCTION

Nearly 65% of American adults are currently overweight based on a body mass index (BMI) of 25-29 kg/m2, and over 30% of American adults are considered obese (BMI ≥ 30 kg/m2). The prevalence of obesity has increased so rapidly in the U.S. over the past two decades that it generally is referred to as an epidemic.[1] With obesity being linked to heart disease, diabetes, hypertension, and other chronic diseases, serious public health implications emerge.[2] In an effort to control this epidemic, health professionals have developed strategies at both the population and individual levels.[3-5]

Suggested strategies for managing obesity at the population level are similar to those that have been used to target the tobacco industry. Taxes on nutritionally empty, high-fat foods, as well as a moratorium on the advertisement of junk foods to children, form the basis of environmental control strategies-although these approaches have had limited application to date.[5] While such public health efforts will be important for managing obesity at the population level in the future,[3] they currently offer little direction for the overweight individual.

Efforts at the individual level typically focus on dietary restraint and exercise with the goal of expending more calories than one consumes.[6,7] However, this strategy has had disappointing results since the level of restrained eating and exercise necessary to achieve weight loss seems unsustainable for most people given the current obesigenic environment.8 Even more worrisome is the finding that dietary restraint may paradoxically be predictive of obesity among some groups.[9]

As an alternative to restrictive dieting and its potentially negative outcomes, an

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anti-dieting movement began to take shape in the 1980s and has continued to gain empirical support.10 This movement is based on the assertion that restrained dieting (i.e., controlled meal plans, avoidance of taboo foods, and/or restricted intake of fat grams or calories) is not sustainable and may contribute to such negative outcomes as weight recycling, altered body composition, heightened fat storage potential, decreased resting metabolism, dysfunctional relationships with food, increased risk of eating disorders, low self-esteem, and an overall sense of failure among dieters.[11-13] Proponents of the anti-dieting movement further argued that many individuals seem to be capable of achieving a healthy body weight while maintaining an unrestrained relationship with food.[14] Informal assessments revealed that for these individuals food intake was based primarily on physical hunger cues, rather than on diet plans, environmental cues, emotional states, or other external factors.[15,16] Such individuals came to be referred to as intuitive eaters, and intuitive eating has continued to grow in popularity as an alternative to restrictive dieting.[17,18]

In short, the concept of intuitive eating suggests that all individuals have within themselves a natural mechanism that if allowed to function will ensure good nutrition at a healthy weight.[14] As individuals get in touch with this "inner guide" or access their "inner wisdom" they will be more in tune with their bodies' physical needs and will eat in a way that supports healthy weight maintenance and positive nutrition. At the same time they will avoid overeating, obsessive food consumption, harmful dieting, or mindless nibbling.[17]

This concept of intuitive eating has come to include several key attributes.[14-17,19] The first is the ability to clearly recognize the physical signs of hunger, satisfaction, and fullness. Second, the intuitive eater is capable of sensing the nutritional needs of the body. Since there are no taboo foods or restrictions on eating, the intuitive eater considers the full range of food possibilities and carefully weighs available choices against physical promptings. Third, for the intuitive eater, the physical effects of food consumption are carefully monitored in terms of satisfaction. Food is not consumed unconsciously while driving or watching television, but is instead fully appreciated as it satisfies the nutritional and hunger needs of the body. Fourth, as promoted in the self-help literature, intuitive eating has taken on a philosophical orientation that values the health and energy of the body more highly than the fashionable rewards of an attractive appearance. Theoretically, an intuitive eater is more likely to be concerned about the functional benefits of fitness and proper diet composition, rather than the social advantages of a lean figure. Finally, the intuitive eating philosophy strongly continues to reject restrictive dieting as a means of weight control, but instead commits individuals to mastering the elements of intuitive eating in an open, unrestrained relationship with food that promotes healthy weight management and positive self-esteem.[20] All of these attributes taken together lead to the proposition that intuitive eaters are more likely to be a healthy weight and have other positive health indicators.

PURPOSE AND SIGNIFICANCE

For managing body weight and food issues at the individual level, the principles of intuitive eating are being advocated increasingly in a variety of health settings, especially in the treatment of eating disorders.[21] Yet there is little empirical evidence that the assumptions of intuitive eating are legitimate. The primary assumption, that adherence to intuitive eating principles is associated with positive health indicators, seems especially important to investigate before intuitive eating can be promoted as a positive approach to healthy weight management. The purpose of this pilot study was to evaluate the relationship between intuitive eating and several health indicators among female college students. Results of this study will be helpful in establishing the usefulness of intuitive eating as a potential health promotion tool for addressing the obesity epidemic at the individual level.

METHODS

Sample

The target population for this study was female college students with the sample being drawn from coeds enrolled in a required general education course at a regional western university. Since issues with body size, dieting, and eating disorders are disproportionately present among women only females were selected for this study.[22] Even though selection of the participants was not strictly random, it was felt that participants accurately represented females within this university population given the general education requirement that all students take the selected course. Participation in the survey was voluntary, no rewards were given for participating, and no penalties were administered for refusal to take part. The study was approved prior to data collection by the university's Institutional Review Board (IRB).

Instrument

The Intuitive Eating Scale (IES) was administered in paper/pencil format to the female students in the class to obtain the high and low intuitive eating groups mentioned above. The IES has been evaluated previously among college females in the U.S. and found to be valid and reliable.[23] Original factor analysis of the IES isolated four factors that replicated scale construction, including: intrinsic eating, extrinsic eating, anti-dieting, and self-care. Alpha coefficients for the subscales ranged from .42 to .93 indicating moderate to high levels of internal consistency, and retesting after four weeks yielded adequate reliability coefficients ranging from .56 to .87.

Higher scores on each of the four subscales, as well as a higher total score, indicate adherence to intuitive eating principles. Intrinsic eating measures an orientation to eating that is internally driven by the primary desire to satisfy hunger and nutritional needs. Extrinsic eating measures the degree to which eating is influenced by external factors such as social situations, environmental cues, or emotional states. Anti-dieting represents an aversion to diet

Table 1. Means (standard deviations) and significance levels for high and low scorers on IES subscale and total scores

IES Subscales	High IES Scorers (N=15)	Low IES Scorers (N=17)
Intrinsic*	12.47 (1.60)	10.88 (2.03)
Extrinsic***	20.13 (3.42)	13.59 (2.67)
Anti-dieting***	54.00 (5.29)	30.35 (4.33)
Self-care***	16.40 (2.26)	11.12 (2.57)
Total IES Score***	103.00 (7.00)	64.94 (4.66)

* $p < .05$ ** $p < .01$ *** $p < .001$

Table 2. Mean values for select health variables based on high or low total IES scores.

Variable	High IES score	Ideal Range	Low IES Score
Fasting Glucose	85.69	<110 mg/dl	80.69
Total Cholesterol	153.23	<150 mg/dl	165.81
HDL*	55.69	>70 mg/dl	48.81
LDL	86.85	<100 mg/dl	99.88
Triglycerides*	53.00	<100 mg/dl	85.75
Total/HDL Ratio*	2.82	<3.0	3.45
Cardiovascular Risk*	37.32	>40 (protected)	30.36
BMI**	20.63	18.5–24.9 kg/m^2	23.84
Percent Body Fat	19.65	17–22% (lean)	21.22
Iron	86.08	60–170 mcg/dl	94.13
TIBC*	363.77	240–450 mcg/dl	402.75
Estimated VO_2	43.07	>41 ml/kg/min	41.89

* $p < .05$ ** $p < .01$ *** $p < .001$

plans, caloric restriction, and dietary restraint. Self-care evaluates the preference for health and fitness over fashion and social acceptance.

Health Indicators

After administering the IES, high and low scorers were identified and invited to participate in the second part of the study, which included the collection of information on different health indicators. Participants were asked to give a 12-hour fasting blood sample, which was analyzed for glucose, total cholesterol, high-density lipoproteins (HDL), low-density lipoproteins (LDL), triglycerides, iron, and total iron binding capacity. Cardiovascular risk was calculated based on the blood lipid profile, with a higher score indicating lower risk of a cardiovascular episode. Body mass index (BMI) was calculated based on measured height and weight. Other health indicators included percent body fat, measured using air displacement plethysmography (Bod Pod),[24] and estimated maximal oxygen uptake (VO2 uptake) using the submaximal treadmill jogging test.[25] Both the Bod Pod and the submaximal treadmill jogging test have been shown to be valid and reliable measures for estimating percent body fat and cardiorespiratory fitness among college females.

RESULTS

While the original sample consisted of 205 females, the final sample used for comparison in this pilot study consisted of 15 females who scored high and 17 females who scored low on the Intuitive Eating Scale. The final sample ranged in age from 18 to 22 with scores for the total IES falling between 56 and 116. Analysis of the IES subscale scores indicated as expected that differences in the mean scores on each of the subscales were significantly different between the high and low intuitive eaters. The most striking difference was between the mean scores of the anti-dieting subscale for high versus low intuitive eaters (54.0 and 30.4, respectively).

Table 2 presents the mean values for select health indicators for the high and low intuitive eaters. Significant differences were found between the two groups in regards to health status. Overall high intuitive eaters were healthier than low intuitive eaters, as indicated by the higher HDL levels, lower BMI and TIBC among high intuitive eaters compared with the low intuitive eaters. (Higher than normal TIBC scores may indicate diet-related iron deficiency anemia.) Cardiovascular risk scores indicate that both groups fell in the moderate risk range, although high intuitive eaters were significantly closer to the ideal range. On the other hand, no significant differences were observed between the high and low intuitive eaters on the remaining health indicators including glucose, cholesterol, LDL, percent body fat, and iron.

Table 3 presents the correlation coefficients between each of the IES subscale and total scores and select health indicators. The results indicate that there is a significant negative correlation between BMI and the IES subscale and total scores, with the exception of intrinsic eating (which approached significance). Most notably, this correlation is strongest between BMI and the total score, as well as BMI and anti-dieting subscale score. Triglycerides were negatively correlated with two of the subscales (extrinsic and anti-dieting) and with the total IES score, while HDL and cardiovascular protection were positively correlated with these same scores. TIBC was negatively correlated with the anti-dieting subscale and the total IES scores.

Surprisingly, cholesterol and LDL levels were positively associated with the intrinsic eating subscale score. Glucose, percent body fat, blood iron levels, and VO_2 uptake were not significantly correlated with any of the IES subscale and total scores, but observable trends were generally in the predicted direction. For example, even though significance was not obtained, all subscales and the total IES score were positively associated with VO_2 uptake and negatively associated with percent body fat.

Table 3. Correlations between select health variables and IES subscale and total scores

Variables	Intrinsic	Extrinsic	Anti-dieting	Self-care	Total IES
Glucose	.196	-.050	.187	.250	.177
Cholesterol	.429*	-.061	-.222	-.065	-.125
HDL	.197	.442*	.416*	.260	.437*
LDL	.386*	-.121	-.252	-.101	-.169
Triglycerides	.143	-.323	-.483**	-.205	-.408*
Cardiovascular Risk	-.089	.414*	.443*	.293	.425*
Body Mass Index	-.327	-.424*	-.555***	-.451**	-.576***
Percent Body Fat	-.306	-.159	-.285	-.314	-.311
Iron	.082	.002	.002	.036	-.022
TIBC	-.247	-.343	-.399*	-.235	-.404*
Estimated VO_2	.345	.090	.217	.332	.258

* $p < .05$ ** $p < .01$ *** $p < .001$

DISCUSSION

While there continue to be commentaries and analyses in the professional literature suggesting that dieting is an acceptable, if not desirable, activity for the overweight,[6,7] there is also a large body of evidence indicating that dieting is at best ineffective, and at worst a contributor to a variety of negative outcomes-especially among certain populations.[8,10,12] Given the apparent lack of effectiveness of conventional dieting practices, and the potential for harm, it seems appropriate to consider non-dieting approaches to healthy weight management that promote a normative relationship with food.[11] The purpose of this study was to evaluate one such method, intuitive eating, as measured by a variety of health indicators among female college students.

Health Outcomes

Intuitive eating has been promoted primarily as a sustainable avenue for maintaining a healthy body weight without resorting to restrictive dieting.[11] The strongest relationship found in this pilot study was between intuitive eating and body size. BMI yielded a significant negative correlation with three of the four IES subscales, and the fourth subscale approached significance. Overall, the total IES score accounted for one-third of the variance in BMI ($r^2 = .33$). Other studies have found similar relationships between intuitive, or hunger-based, eating and body mass index.[23,26] Even though statistical significance was not achieved, all subscales and the total IES score similarly exhibited a negative correlation with percent body fat (with three of the five measures approaching statistical significance). From a health perspective, high IES scorers had a significantly lower mean BMI, in the low end of the normal range, while low IES scores tended to have a mean BMI in the upper end of the normal range. While not statistically different, the mean percent body fat of high scorers was also somewhat lower than those who scored low on the IES.

To date, we are not aware of any research that has attempted to evaluate the relationship between intuitive eating and other health indicators such as blood lipid profiles, cardiovascular risk, blood glucose or blood iron levels, and fitness levels. This study found that in general blood lipid profiles were superior for those who scored high on the IES including significantly higher HDLs (high density lipoproteins) and significantly lower triglycerides. HDLs were positively correlated with all IES subscale and total IES scores, attaining significance with extrinsic, anti-dieting, and total scores. Similarly, triglyceride levels were negatively associated with three of the four subscales and the total IES score, attaining significance with anti-dieting and the total score. Relationships with total cholesterol and low-density lipoproteins (LDLs) were less conclusive. However, an overall cardiovascular risk score based on various blood lipid ratios indicated significantly greater levels of protection for those who scored high on the IES.

Fasting glucose and blood iron levels did not differ significantly between high and low IES scorers, and were not significantly correlated with any of the IES subscale or total scores. Fitness levels as measured by estimated maximal oxygen uptake were slightly higher for those who scored high on the IES, and fitness as measured by estimated VO_2 max was positively associated with all of the IES subscale scores and total IES score but measured relationships did not achieve significance. Those who scored low on the IES did have significantly higher total iron binding capacity (TIBC) levels, although both high and low scorers were in the acceptable range. The mean value of 402.75 mcg/dl attained by low IES scorers begins to approach the 450 cut-off value that can indicate anemia as a result of insufficient iron in the diet.

IES Subscales

Among the IES subscales, the anti-dieting subscale demonstrated the strongest relationships with measured health indicators including BMI, HDL levels, total cholesterol, cardiovascular risk, and TIBC. All of these relationships were statistically significant, moderately strong, and in the predicted direction. There is a consistent body of research that demonstrates lower body weights for those who do not diet,[21,27] but

this is the first study that has found a relationship between an anti-dieting attitude and other positive health indicators.

The extrinsic subscale, a high score indicating that the participant seldom eats for emotional, social, or environmental reasons, was also significantly correlated with BMI, HDL levels, and cardiovascular risk at moderately strong levels in the predicted direction. Emotional eating is associated with unmet psychological needs,[28,29] and may contribute to such negative outcomes as ineffective weight control,30 binge eating, 31 bulimic eating attitudes,[32] and higher caloric intake.33 Eating that is motivated by social or environmental cues also is associated with potential weight gain.[26,34] The findings of this study suggest that those who avoid social, emotional, and environmental eating have lower BMIs with improved cardiovascular protection and positive blood lipid profiles.

High scores on the self-care subscale indicate a preference for physical health and fitness over fashion consciousness. Relationships between self-care scores and the health indicators used in this study followed predicted directions, but only achieved significance with body mass index. Not surprisingly, correlations between self-care scores, fitness (estimated VO_2 max), and percent body fat were in the predicted direction and also approached significance.

The primary anomaly of this study was the intrinsic eating subscale, a high score indicating that the participant eats primarily in response to physical hunger (as opposed to external factors). For most health indicators used in this study, intrinsic eating scores followed the health protective trends exhibited by other subscales and total IES scores, although without attaining statistical significance. However, significant positive relationships between intrinsic eating, LDL levels, and total cholesterol were not in the hypothesized direction and cannot be readily explained.

LIMITATIONS

The cross-sectional design used for this study was unable to suggest cause-and-effect relationships. Further, the study included a relatively small sample of somewhat homogenous students at a single university. While the study participants were arguably representative of female students at their university, results may not be generalizable to females in other college or community settings. Participants in this study were generally fit, had BMIs in the normal range, and had health indicators that fell within the normal to ideal range. That hypothesized differences were detectable in such a small, healthy, homogenous population, however, suggests that the differences were real and worthy of further exploration.

CONCLUSION

In general, this pilot study found modest support for the research hypothesis. Individuals who scored highest on intuitive eating tended to have lower body mass index, better blood lipid profiles, and lower levels of cardiovascular risk. These findings provide tentative evidence that intuitive eating may function as a healthy alternative to dieting, and may be a useful tool for the promotion of healthy weight at the individual level.

With the exception of intrinsic eating and blood lipids, IES subscale and total scores were generally consistent in their relationships with health indicators, suggesting that the subscales were useful in measuring related constructs of a coherent eating style-intuitive eating. The IES seems suitable for continued research in this area.

Based on research to date, it can be argued that intuitive eating is a measurable eating style[23] that may be beneficially associated with such health indicators as BMI, blood lipid profiles, and cardiovascular risk among certain populations (i.e., female college students). Further research will be needed to address the question of causality, and to evaluate the health efficacy of intuitive eating among diverse populations. It also remains to be determined if intuitive eating can be learned and practiced in a sustainable way by individuals coming from a variety of eating style backgrounds.

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