PREVALENCE OF EDI-2 PSYCHOLOGICAL SYMPTOMS
ASSOCIATED WITH EATING DISORDERS AMONG MULTI-ETHNIC
COLLEGE FEMALES: DOES ETHNICITY MAKE A DIFFERENCE?

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"Be strong and courageous, and get to work. Do not be frightened by the size of the task, for the Lord God, my God, is with you; He will not forsake you. He will see to it that everything is finished correctly." I Chronicles 28:20
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1.1 CLASSIFICATION

The development of the criteria-based classification of eating disorders began in 1952 when the first Diagnostic and Statistical Manual, Mental Disorders (DSM-I) was introduced by the American Psychiatric Association. Further advances in the understanding of the psychopathology of eating disorders instigated and necessitated the publication of the next 4 editions: DSM-II (1968), DSM-III (1980), DSM-III-R (1987) and the most up-to-date version DSM-IV-TR (2000) (1).

Anorexia Nervosa (AN)

DSM-IV-TR diagnostic criteria for Anorexia Nervosa are listed in Appendix A, and each of these are now discussed. Criterion A focuses on the individual's actual current weight. It is important to note that the suggested cutoff point of 85% in criterion A is intended to be a guideline for the clinician and not the standard. The clinician must also take into consideration the individual's weight history and body type. Criterion B focuses on the individual's fear of future weight gain. Typically successful weight loss does not lessen the individual's fear of weight gain, but actually serves to increase their fear. Criterion C focuses on the individual's attitude and perception of their current weight and body shape. Anorexic individuals tend to have a
distorted view of their own body weight and shape. While some may feel overweight as a whole, others tend to focus their concern of excess fat being found on select body parts, commonly the abdomen, buttocks, and thighs. Some individuals do acknowledge their current state of thinness. However, these same individuals tend to ignore the seriousness of the medical consequences associated with their low body weight. Criterion D focuses on a physiological disturbance associated with a decrease in the secretion of follicle-stimulating hormone [FSH] and luteinizing hormone [LH] and consequently abnormally low levels of estrogen. Although in most individuals weight loss precedes the onset of amenorrhea, a small minority experiences a disturbance in their menstrual cycle prior to weight loss (2).

Insight into the behavioral history of an individual's anorexic episode(s) allows for further classification into one of two subtypes based upon the presence or absence of binge-eating and/or purging. The Restricting Type predominantly utilizes dieting, fasting, or excessive exercise to achieve weight loss, and does not regularly engage in binge-eating (see Criterion B in Appendix B) or use self-induced vomiting, purging, as a compensatory behavior. If an individual does regularly engage in Binge-eating and/or purging behavior, then they are classified as the Binge-Eating/Purging Type. Due to lack of sufficient research a minimum frequency has yet to be
established for determining whether an individual's binge/purge episodes are to be considered "regular" (2).

Bulimia Nervosa (BN)

Current DSM-IV Criteria for Bulimia Nervosa are listed in Appendix B, and each of these are now discussed. Criterion A focuses on the definition of a binge. An episode of eating is considered a binge if 1) an unusually large amount of food, given the circumstances, is eaten within a distinct period of time and 2) the individual does not feel in control of their eating. Criterion A (1) stresses the importance of taking into account the context of a meal when defining a binge episode. For example, on holidays, such as Thanksgiving, it is not unusual for an individual to consume large amounts of food during a single meal. It is therefore important for the context of the meal to be taken into account. It is also important to note that one binge episode can occur over multiple settings. For example, an individual may start a binge at a restaurant and then continue to binge at home alone. Criterion A (2) stresses the sense of lack of control of the amount eaten during a binge episode. Most individuals early in their course of the disorder describe their feeling of lack of control as being sharp and sudden. Although an impairment in control is considered universal, there are exceptions (i.e. an individual may find it difficult to stop a binge episode if their phone rings, but will stop if someone unforeseenly walks into the room (2). Criterion B addresses the Bulimic
individual's tendency to use inappropriate compensatory behaviors to prevent weight gain. Self-induced vomiting immediately following a binge episode, or purging, is a compensatory behavior routinely used by 80 – 90% of all bulimics. Typically, the individual uses their fingers or another object to stimulate the gag reflex. If practiced regularly, the individual will acquire the ability to gag at will. Bulimics are classified as the Purging Type if one or more of the following purging compensatory behaviors are used regularly: self-induced vomiting or the misuse of laxatives, diuretics or enemas. It is important to note that Bulimic individuals do not always regularly compensate for their binge episodes via a purging behavior. Those classified as the Non-purging Type use fasting and/or excessive exercise as compensatory mechanisms (2, 3). Criterion C establishes an average minimum per week and month in which the compensatory behaviors should occur. As addressed in Criterion D, Bulimics self-evaluation is strongly influenced by their confidence and satisfaction with their body shape and weight. Criterion E ensures that individuals who would most appropriately be classified as a Anorexic Nervosa Binge-Eating/Purging Type are not misdiagnosed with Bulimia Nervosa (2).

Eating Disorders Not Otherwise Specified (EDNOS)

The term Eating Disorder Not Otherwise Specified (EDNOS) may be used in diagnosing individuals who, according to the DSM-III-R, do not meet the
criteria for a specific eating disorder but who, for example: 1) have all of the features of Bulimia Nervosa but fail to meet the frequency criterion for binge eating; or 2) do not experience absence of menses but meet all other of the criteria for Anorexia Nervosa. A list of examples that should be considered by clinicians when determining if an individual is considered to have an Eating Disorder Not Otherwise Specified are listed in Appendix C (2). Some experts believe that the criteria for an Eating Disorder Not Otherwise Specified (EDNOS) should be used when assessing college students in order to avoid under diagnosing the problem (4). Based on previous research this particular population has demonstrated that college women often portray atypical symptoms (5). Schwitzer et al. found the most common eating disorder pattern among college women included regular binge eating, coupled with daily exercise and occasional purging (6). A 5:1 ratio in the general public of partial syndromes to full syndromes has also been demonstrated (7).

Binge-Eating Disorder

Binge-Eating Disorder, the most recent eating disorder established, is not further discussed within the context of this paper as it is not measured by the standardized scale chosen for the present study. Research criteria used for binge-eating disorder are listed in Appendix D (2).
1.2 ASSOCIATED FEATURES AND DISORDERS

DESCRIPTIVE FEATURES

Anorexia Nervosa

Common symptoms associated with being underweight include: depressed mood, social withdrawal, irritability, insomnia and diminished sexual drive. Anorexic individuals typically struggle with: feelings of ineffectiveness, anxiousness when eating in front of others, a strong need to control one's environment, inflexible thinking, limited social spontaneity, perfectionism and overly restrained initiative and emotional expression (2).

Bulimia Nervosa

Bulimic individuals typically: maintain a weight within the normal range for their age and height, are heavier than their peers prior to the onset of the eating disorder, and diet in between binges by consuming low-calorie food items and avoiding problem foods that will likely initiate a binge episode (2). There is a positive association between bulimia and impulse-control dysfunction, substance abuse, depressive symptoms and suicide attempts (8).

MENTAL DISORDERS

Anorexia Nervosa

Mental disorders associated with Anorexia Nervosa include: Major
Depressive Disorder, Obsessive Compulsive Disorder, and Personality Disorder (2).

Bulimia Nervosa
Mental disorders associated with Bulimia Nervosa include: Mood Disorders (e.g., Dysthymic Disorder, Major Depressive Disorder), Anxiety Disorders, and Personality Disorders (2).

LABORATORY FINDINGS
Anorexia Nervosa
Abnormal laboratory findings commonly presented during the semistarvation stage of Anorexia Nervosa include: leukopenia, mild anemia, elevated blood urea nitrogen (BUN), elevated liver function tests, hypomagnesemia, hypozincemia, hypophosphatemia, and hypermylasemia. Metabolic alkalosis, hypochloremia and hypokalemia may occur as a result of induced vomiting. Metabolic acidosis may result from laxative abuse. Serum thyroxine (T₄) and triiodothyronine (T₃) levels are usually decreased. Low serum estrogen levels are exhibited in females and low serum testosterone levels are exhibited in males. In both male and female anorexics there is a gradual diminish in secretion of luteinizing hormone (LH) to levels that are considered normal in prepubertal or pubertal individuals (2).
Bulimia Nervosa

Electrolyte imbalances such as hypokalemia, hyponatremia, and hypochloremia are common due to habitual purging behavior. Metabolic alkalosis may occur due to excessive loss of stomach acid. Metabolic acidosis may also occur due to frequent diarrhea resulting from laxative abuse. Elevated levels of serum amylase is present in some bulimic individuals (2).

PHYSICAL FINDINGS AND GENERAL MEDICAL CONDITIONS

Anorexia Nervosa

Most physical signs symptoms associated with Anorexia Nervosa can be explained by their current state of starvation or semi-starvation. Common physical signs and symptoms include: emaciation, amenorrhea, constipation, abdominal pain, cold intolerance, lethargy, excess energy, hypotension, hypothermia, bradycardia, dryness of skin, development of lanugo (fine downy hair) on the trunk area, peripheral edema, and a significant decrease in resting energy expenditure (REE). Hypercarotenemia develops in some individuals resulting in a yellowing of the skin. Purging Type anorexics may exhibit hypertrophy of the salivary glands, dental enamel erosion, as well as scars or calluses on the dorsum of their hands (2).
Other general medical conditions associated with Anorexia Nervosa include the development of normochromic normocytic anemia, impaired renal function (related to chronic dehydration and hypkalemia), cardiovascular problems (i.e., arrhythmias), dental problems, and osteoporosis (as a consequence of low calcium intake and absorption, a decrease in estrogen secretion, and a rise in cortisol secretion) (2).

Bulimia Nervosa

Purging Type bulimics may exhibit: enlarged salivary glands, erosion of dental enamel, chipped teeth, increase number of cavities, as well as scars or calluses on the dorsum of their hands. Individuals who use syrup of ipecac to induce the gag reflex may develop serious cardiac and skeletal myopathies (2).

Irregular menstrual cycles may also occur. Such irregularities may be due to weight fluctuations, nutritional deficiencies, or emotional stress. Uncommon symptoms include: esophageal tears, gastric rupture, cardiac arrhythmias and rectal prolapse (2).

1.3 DIAGNOSIS OF EATING DISORDERS

Diagnosis of eating disorders has proved to be a complicated task to many clinicians. The Diagnostic and Statistical Manual of Mental Disorders (DSM-
IV-TR) is used as a guideline when utilizing the four main types of measurement for eating disorders: structured interviews, diaries, laboratory tests and standardized scales (2).

The structured interview is held by many experts to be the "gold standard" when objective information is needed to further the understanding of the eating disorders and not simply a quantitative number of the occurrence. Diaries, a second method, are viewed as the most effective measurement for diagnosing and assessing treatment. Subjects must be instructed in the proper use of the diary, but when completed correctly, results are comparable to those obtained by interview. Laboratory tests are a third method, and involve the measurement of the amount of food consumed in tests meals. Resulting data are then used as indicators of the degree of psychopathology. A fourth method for assessing eating disordered patients is the use of self-administered standardized scales (2).

Throughout the history of eating disorder research a wide range of scales have been developed and tested. Selection of the appropriate scale greatly varies among research studies. Due to the diversity in pathognomonic thoughts and behaviors, no single standardized scale has been proven to be completely sensitive, reliable or valid in diagnosing and/or assessing subjects for all possible eating disorders across all population groups (9, 10). The
advantages self-report standardized scales offer over a structured interview include: 1) simplicity, 2) affordability, and 3) administration can occur by nonprofessional staff (1). Although much progress has been made in understanding, classifying and diagnosing eating disorders within the past two decades, there are still many questions that remain to be answered (11).

1.4 PREVALENCE

Anorexia Nervosa

According to the American Psychiatric Association Work Group on Eating Disorders, an estimated 0.5% and 3.7% of Caucasian females develop Bulimia Nervosa within their lifetime (12). Recorded prevalence estimates for Anorexia Nervosa based on research vary depending on the methods, inclusion criteria and sample of the study. The disorder is more prevalent in women than in men, with less than 10% of all cases occurring in males (2).

Bulimia Nervosa

According to the American Psychiatric Association Work Group on Eating Disorders an estimated 1.1% to 4.2% of Caucasian females develop Bulimia Nervosa within their lifetime (12). Prevalence estimates for Bulimia Nervosa based on research also vary depending on the methods, inclusion criteria and sample of the study. As with Anorexia Nervosa, the disorder is more
prevalent in women than in men, with less than 10% of all cases occurring in males (2).

Among Ethnic Groups

Both Anorexia Nervosa and Bulimia Nervosa seem to be more prevalent in industrialized societies, specifically: the United States, Canada, Europe, Australia, Japan, New Zealand, and South Africa (2). Traditionally, non-Caucasian ethnic groups have been shown to contribute only an average of 5% of the total number of eating disorder cases in the U.S (13). Although Caucasians make up the vast majority of recorded eating disorder cases, recent studies have reported incidence and prevalence rates among non-Caucasian women significantly higher than previously thought (14-16). To date, prevalence rates for eating disorders among non-Caucasian ethnic group populations have been determined despite growing interest by researchers (15-17).

African American

The little research that has been conducted on the prevalence of bulimia nervosa in minority groups within the U.S. has mainly been focused on African American and Hispanic American populations (18). Gray et al. reported 3% of male and female African American undergraduate students met DSM-IV criteria for bulimia. The authors noted, however, that the
African American students reported less emphasis on food and weight when compared to a similar Caucasian sample (19). Several protective factors have been postulated as possible explanations for lower risk trends for developing anorexia or bulimia among African American women.

- In general, African American women accept their body size, even when they are at a heavier weight than their Caucasian peers. Greater body acceptance among this population is likely a result of their failure to identify with the standards of Caucasian women, especially the standard for thinness (19). For example in a study conducted by Hamilton et al. among a population of female ballet dancers, a group known to be at high risk due to the association between thinness and performance, the African American dancers reported lower rates of disordered eating than their Caucasian counterparts (20).

- African American women typically experience shorter adolescent periods, the period in which most eating disorders occur. Therefore, African American women develop eating disorders at an older age. Awareness of later-age occurrence among this population is important for all researchers, counselors and teachers (21).

- African American women typically do not seek to adapt to the social norms of Caucasian women who place strong value on thinness, beauty and charm. Rather, they are taught to think more practically and to strive for independence and success (22). Another reason low incidence
rate of anorexia nervosa among both African Americans and Hispanics has been hypothesized to be a result of under diagnosis (23). Researchers suggest that as African Americans experience acculturation of Caucasian norms an increase in eating disorders will follow (24).

Hispanic

Latino women have been a targeted population for eating disorder studies among ethnic minorities (6). Robinson et al. reported that among 6th and 7th grade girls in northern California, Hispanic and Asian girls, the leanest (≤ 25th percentile for Body Mass Index), admitted to having significantly greater body dissatisfaction than their Caucasian peers (9). Heibert et al. showed no differences in respect to clinical characteristics or treatment outcome between 10 Hispanic women (6 Mexican-Americans, 2 Colombians, and 2 Mexicans) and 20 Caucasian women (25). Smith and Krejci reported that among a large female and male high school sample, the Hispanic group's mean scores on most measures of disordered eating (bingeing, induced vomiting, fasting) were comparable to those of the Caucasian group, but not as high as the Native American group (26).
Native American

As with other ethnic groups in America, little research has been conducted among Native American women (24). Smith and Krejci reported measurements of disturbed eating (bingeing, induced vomiting, fasting) were highest in Native American male and female high school students when compared to their Hispanic and Caucasian peers, with the Caucasian group being the lowest. There was an association between an increase in body fatness and an increase in body dissatisfaction, fear of weight gain, frequency of extreme dieting, and frequency of vomiting among all three ethnic groups (26). In a study conducted by Rosen et al on a reservation in Michigan found that 74 % of Chippewa girls and women admitted to dieting as a means to lose weight. The majority of those who had dieted also admitted to using diet pills and fasting as weight loss techniques (27).

Asian American

Asian American women are currently the least studied ethnic group in regards to eating disorders (13). The findings of three previous studies indicate a need for concern by health care professionals, as well as the need for further research among the Asian American population. Tsai and Gray conducted a study in which the Eating Disorders Inventory-2 (EDI-2) and the Eating Disorder Inventory Symptoms Checklist (EDI-SC) were used to measure the prevalence of bulimia nervosa among 257 Asian American
Women. Based upon criteria outlined in the DSM-IV, only 0.78% were classified as bulimic. However, when three out of the four criteria were used, 5.1% of the Asian American women would have been classified as bulimic (18). Lee et al. reported high levels of body dissatisfaction among Chinese undergraduates in Hong Kong. The authors theorized that the shift from traditional emphasis of facial features to the emphasis of body shape as an indicator of beauty was due to the increased acculturation towards a westernized society (28). Kuboki et al. found 1312 cases of Anorexia Nervosa in Japan, a doubling of reported cases reported over the course of ten years (29). Nakamura et al. reported in 2000 the prevalence of Anorexia Nervosa and Bulimia Nervosa in Japan reported by major medical facilities within Japan to be 4.79% and 1.02%, respectively (30).

Pacific Islanders

There has been very little eating disorder research conducted among Pacific Islanders. In a study conducted by Harvard Medical School, a significant increase in dieting and self-induced vomiting to control weight among adolescent females living on the Pacific Island nation of Fiji was found to be associated with the introduction of Western television. Traditionally, Fijians encourage hearty appetites within the context of the family and the community. After only three years (1995 – 1998) of exposure to Western body shape ideals portrayed by actresses and models, Fijian adolescent females
reported a significant increase in self-induced vomiting, dieting behavior and body dissatisfaction (31).

1.5 RISK FACTORS

Individuals

There are biological, psychological and social influences that have been identified as placing an individual at higher risk for an eating disorder. Researchers are still in the process of discovering what genetic determinants, if any, predisposes an individual to the development of an eating disorder. Genetic components currently held as conspicuous factors in the etiology of eating disorders include serum leptin and plasma neuropeptide Y (NPY) levels (32-34). Pubertal endocrine changes mediate biological changes associated with both psychological and physiological disturbances observed in eating disordered individuals (8). Research suggests that there is no one psychodynamic family pattern associated with the development of eating disorders (35, 36). It has been shown that negative family experiences early in life may initiate intra-psychic conflicts that render an individual vulnerable to psychological pathology associated with eating disorders (36). These intrapersonal conflicts may lead to personality and behavioral changes that promote and support dieting (8). The level of influence exerted by societal values of thinness is also seen as an important risk factor for eating disorder development (37).
High Risk Groups

To date, there are several groups of college women who have been identified as being at higher risk for developing eating behavior problems. Those found most at risk include: athletes (e.g., gymnasts, runners and wrestlers), dancers and dietetic majors (5, 38-42). It is important to note that there is still a debate as to whether or not dietetic majors are more likely to develop an eating disorder than non-dietetic majors (43, 44). Results from a study conducted by Reinstein et al. suggest that exposure to sound nutrition information was positively associated with healthier eating patterns and less eating disorders among dietetic majors (45).

With respect to ethnicity, Western, Caucasian females are held as being at higher risk for developing eating disorders than their non-Western, non-Caucasian counterparts (14, 16, 46). The "low risk theory" for the development of eating disorders among ethnic minorities in the United States is argued by some based on two main protective factors:

- The disproportionate percentage of lower socioeconomic status among non-Caucasian ethnic groups within the United States and
- The lack of emphasis placed on body weight and shape compared to westernized Caucasian women (15, 16).
The current low prevalence rates for Anorexia Nervosa and Bulimia Nervosa among non-Caucasian American ethnic groups is believed to be due in part to three levels of reporting bias:

- Self-underreporting due to a lower utilization of the health care system (15, 16, 47).
- Under-diagnosis by health care professionals due to an assumed lower risk (15, 16, 47).
- Most large-scale epidemiological studies are based on Caucasian female samples (15, 16, 47).

Cultural differences in preferred body shape and degree of emphasis placed on body image, as well as genetic polymorphisms may also explain differences seen in prevalence of eating disorders between ethnic groups (16, 48).

Among non-Western societies there is an accumulation of evidence suggesting a positive association between acculturation, the extent to which an individual, group or society adapts to Western body image ideals standards, and the risk for developing eating disorders (13, 15). However, a study by Barr et al. failed to show a significant association between risk for developing an eating disorder and acculturation to American ideals, warranting the need for discretion in attributing the cause of eating concerns among American immigrants to westernization (49). Even if American non-Caucasian ethnic
groups were previously immune to the developing an eating disorder, increasing acculturation among non-Caucasian men and women may make these groups not nearly as protected as was once thought (13, 15).

1.6 COURSE AND OUTCOME
Anorexia Nervosa

Onset of Anorexia Nervosa usually occurs during mid- to late adolescence. A stressful life event often precedes the onset of the disorder. The pathway, prognosis and outcome vary greatly among anorexic individuals. One individual may completely return to a normal state of physical and mental health after a single episode, while another may experience multiple progressively worsening episodes over the course of their lifetime. Typically the Restricting subtype individual evolves into the Binge Eating/Purging subtype within 5 years of the initial start of the disease. In the case of an individual who is considered dangerously underweight, hospitalization may be warranted in order to correct fluid and electrolyte imbalances and to restore weight. Over 10% of individuals who must be hospitalized for their illness die as a consequence of chronic starvation, electrolyte imbalance, cardiac arrest or suicide (2).
Bulimia Nervosa

As with Anorexia Nervosa, the pathway, prognosis and outcome vary greatly among bulimic individuals. Onset of Bulimia Nervosa usually occurs during either late adolescence or early adulthood. The behavior of binge eating commonly develops either concurrent with or following an episode of dieting. Episodes of binge eating may occur infrequently or routinely. Bulimic individuals typically engage in binge eating at least two times per week (2).

1.7 CURRENT TREATMENT

New treatment methods are being formulated in light of the continual progress made in accurately classifying and diagnosing eating disorders (7, 50). Treatment methods for both Anorexia Nervosa and Bulimia Nervosa are generally based upon a three pronged approach: medical nutrition therapy (MNT), psychotherapy and pharmacotherapy (51).

Anorexia Nervosa

Medical nutrition therapy (MNT) initially focuses on the patient’s cessation of weight loss. An emphasis is then placed on gradual restoration of a normal weight. Due to the risk for re-feeding syndrome, caused by rapid feeding in malnourished patients, initial caloric goals should be set below actual estimated caloric needs. Electrolyte levels should be monitored continuously through out the re-feeding process (51).
Psychotherapy for Anorexia Nervosa is aimed at addressing the fears and misconceptions associated with eating. Multiple techniques for both individual and family treatment programs have been developed (8). No one psychotherapy treatment is currently held superior by clinicians and researchers. It has been demonstrated that supportive groups among college students in more advanced stages of recovery are effective adjuncts to treatment (52). The efficacy of pharmacotherapy as a treatment for clinically diagnosed anorexia nervosa has yet to be established (8). However, in a study conducted by Kaye et al., serotonin reuptake inhibitor fluoxetine has been shown to have a 63% improvement rate, compared to only a 16% improvement rate with the placebo (53).

Bulimia Nervosa

Medical nutrition therapy (MNT) for bulimic individuals primarily focuses on the education of dietary guidelines, and the encouragement of normalcy and regularity in eating patterns while maintaining weight. The clinician or dietitian should focus on goals that decrease the chance of binges. For example, avoiding periods of fasting that may lead to a binge/purge/fast cycle (54).

Advances in psychotherapy treatment of bulimia nervosa have been the most affective with the use of cognitive behavior therapy (51). Cognitive behavior
therapy is based upon the theory that bulimics demonstrate a morbid fear of fat. Their attitudes to shape and weight are of significant causal relationship to the maintenance of the disease. Behavioral and cognitive methods are geared towards normalizing the patient's behaviors and attitudes to shape and weight. Antidepressants have also been proven to be effective in controlling the symptoms of bulimia nervosa, including binging and purging, independent of a placebo affect (55, 56).

Among Non-Caucasian Ethnic groups
Once again, in the area of treatment, there have been no major studies measuring ethnicity as a predictor or mediator in outcome. Currently, ethnicity is not held as a conspicuous factor in treatment outcomes (57). One important fact to consider specifically in the treatment of eating disordered Asian women is the typical association of psychological problems with weakness and shame. Thus, many may not seek treatment in order to avoid the risk of being labeled a "weak link" in the chain of society (58).

1.8 PREVENTION AND INTERVENTION PROGRAMS
It has been recommended by researchers, government agencies, and physicians to establish educational and school-based interventions to prevent the development of eating disorders. As a result, intervention programs are
currently being tested in primary, secondary and collegiate educational settings in the United States (59, 60).

Primary prevention is aimed at preventing new cases from arising in individuals who do not presently suffer from an eating disorder. In contrast to primary prevention, secondary prevention is aimed at individuals who are presently the beginning stage(s) of an eating disorder. It has been suggested that strategic intervention methods for primary prevention verses secondary prevention programs may counterbalance each other. Thus, an important point to consider when implementing a prevention program is its actual effectiveness within the targeted population. For instance, an information-giving approach aimed at changing body image attitudes (secondary prevention) may in reality normalize the behavior causing an increase in disordered eating among individuals who previously had none (61).

Springer et al. demonstrated a reduction in both attitudinal and behavioral eating disorder risk factors among 24 female undergraduate students via a body image course. The class was held for 2 hours each week for 10 weeks (62). Winzelberg et al. demonstrated the effectiveness of reducing eating disorder risk factors among 60 college females utilizing an internet intervention program based on cognitive-behavioral treatment (63). A third study tested and proved the usefulness of an electronic bulletin board system
as a tool for students to receive support and share feelings, ideas and concerns regarding topics related to political, social, and personal issues about body image, food and eating (64). Although various primary and secondary prevention programs have been created and implemented, there is still a need for improving the effectiveness of all such programs.

Among Non-Caucasian Ethnic Groups

Another area of interest that is appearing in more recent eating disorder literature is the question of what intervention programs work best among specific populations. With the increasing incidence of eating disorders among non-Caucasian college women there is a great need for intervention programs targeted at the various ethnic groups within collegiate institutes (15). It is probable that disordered eating interventions have not been instigated on more campuses because of under-recognition of the need combined with inadequate resources. Given budget restraints, it is therefore imperative that intervention programs be based on both a needs and outcome assessment, in order to establish the most effective and efficient outreach program. Development of outreach programs should consider help-seeking patterns, including beliefs about causation and healing within the targeted ethnic community (57).
1.9 RATIONALE AND AIMS

At present, there is limited insight into the risk for and prevalence of disordered eating habits among non-Caucasian ethnic groups. With the possible increase in incidence of eating disorders and sub-symptomatic disorders among non-Caucasian ethnic groups in the U.S., the need for more cross-cultural studies assessing prevalence rates of disordered eating symptoms and behaviors among non-Caucasian populations is being suggested by researchers within the field (15). The purpose this study is to determine if ethnicity makes a difference in the prevalence and severity of psychological symptoms associated with anorexia nervosa, bulimia nervosa as measured by the EDI-2 and their sub-clinical forms in a multi-ethnic college population. Additionally, normative values for the Eating Disorders Inventory-2 (EDI-2), a self-report standardized scale, specific for non-Caucasian ethnic groups do not currently exist. The collection of EDI-2 scores among the ethnically diverse student population at the University of Hawai'i at Manoa may serve an important role in the development of such normative values. For these two reasons, the present study is believed to be of significant importance.
2.1 STUDY DESIGN

This present study was a non-experimental, cross-sectional design and part of two larger independent studies: 1) Dr. David Garner, author of the Eating Disorders Inventory –2 (EDI-2) and the Eating Disorders Inventory Symptom Checklist (EDI-SC), is in the process of establishing normative values for the EDI-2 subscales among non-Caucasian ethnic groups. 2) Dr. Robert Randall, a professor in the psychology department at the University of Hawai‘i at Manoa, is also currently collecting eating disorder measurements among the psychology students at the University of Hawai‘i at Manoa.

This study was approved by the University of Hawai‘i Committee on Human Subjects.

2.2 PARTICIPANTS AND RECRUITMENT

Recruitment was conducted among male and female students, age 18 or over, who were taking at least one class within the Psychology Department at the University of Hawai‘i at Manoa during spring, summer or fall 2002 semesters. Potential participants were informed of their opportunity to earn extra credit in exchange for volunteering their in the completion of multiple self assessed inventories under the direction of psychology professor, Dr.
Robert Randall. Participants were informed of their right to decline from participating in the EDI-2 survey, and that they could withdraw from the project at any time without any negative consequence. Participants were assured of anonymity and strict confidentiality. For this reason, an oral consent [Appendix E] was obtained from all participants.

2.3 MEASURES

All subjects who gave oral consent were given a packet containing a brief questionnaire asking for self-reported ethnic identity [Appendix F], along with a copy of the Eating Disorder Inventory (EDI-2) [see Appendix G for sample questions] and the Eating Disorder Inventory - Symptom Checklist (EDI-SC) [see Appendix H for sample questions], as well as a copy of all other eating disorder inventories not related to this thesis being collected under the direction of Dr. Robert Randall during the semester of their participation. Respondents were asked not to obtain assistance from others and were informed that it was optimal to answer all items, but not mandatory for full credit. Combined, the ethnic identity questionnaire, the EDI-2 and EDI-SC required between 30 – 35 minutes to complete, depending on the number of symptom areas relevant to the respondent.
2.3.1 ETHNICITY

The study population was chosen because it represented the unique diversity of ethnicity represented among the students attending the University of Hawai'i at Manoa. A supplemental questionnaire was used to assess the ethnic identity of the participants [Appendix E]. The participants were asked to choose one ethnic group that they most identify with. A total of thirty-one ethnic group choices were listed on the questionnaire. The participants were also given the option to write in their ethnic identity if it was not already listed. The thirty-one ethnic groups are listed under one of seven major ethnic group categories: American Indian or Alaskan Indian; Asian; Pacific Islander; Person of the Indian Subcontinent; African, African-American, not of Hispanic Origin; Latin; and White, not of Hispanic Origin.

2.3.2 EATING DISORDERS INVENTORY-2 (EDI-2)

The EDI-2 [Appendix G] was chosen on the bases of its ability to provide a standardized, self-report measure of psychological symptoms commonly associated with anorexia nervosa, bulimia nervosa and their sub-clinical forms (65). The EDI-2 was developed before the recognition of Binge-Eating Disorder as a type of eating disorder. The EDI-2 is based upon the postulation that eating disorders are both multi-determined and multidimensional (66-68). Originally, the EDI-2 consisted of 64 items, which were divided into 8 subscales. Three of the subscales were designed to assess
attitudes and behaviors concerning weight (Drive for Thinness, Bulimia, Body Dissatisfaction), and five were designed to assess psychological traits clinically relevant to eating disorders (Ineffectiveness, Perfection, Interpersonal Distrust, Interoceptive Awareness, Maturity Fears). In addition to the eight original subscales, three new provisional subscales (Asceticism, Impulse Regulation, and Social Insecurity), a total of 27 new items, were added to comprise the latest version of the EDI-2. The majority of research presented in the EDI-2 manual is based on the original 64 items of the EDI-2 (65).

EDI-2 Subscale Descriptions

Drive for Thinness

This subscale is comprised of seven questions that assess the respondent's "excessive concern with dieting, preoccupation with weight, and fear of weight gain" (69). The "drive for thinness" or the "relentless pursuit of thinness" has been described as the fundamental feature of eating disorders (70). Young females have admitted to being more afraid of becoming fat than they were of nuclear war, cancer or losing their parents (71). The expression of this attribute is critical in diagnosing both clinical Anorexia Nervosa and Bulimia Nervosa (69).
Bulimia

This subscale is comprised of seven questions that assess the respondent's "tendencies to think about and to engage in bouts of uncontrollable overeating (bingeing)" (69). Binge eating is one of the core criteria of the DSM-IV-TR for diagnosing BN. The presence of binge eating in AN serves as the differentiating factor between the bulimic and restrictor subtypes of AN (2, 69).

Body Dissatisfaction

This subscale is comprised of nine questions that measure the respondent's "dissatisfaction with the overall shape and with the size of those regions of the body that are of greatest concern to those with eating disorders (i.e., stomach, hips, thighs, buttocks)". Both body dissatisfaction and dieting have been demonstrated to be strong predictors for future onset of eating disorders (69, 72-74).

Ineffectiveness

This subscale is comprised of ten questions that assess the respondent's "feelings of general inadequacy, insecurity, worthlessness, emptiness, and lack of control of one's life" (69).
Perfectionism

This subscale is comprised of six questions that measure the extent to which the respondent’s “believes that personal achievements should be superior.” A genetic and/or congenital predisposition for perfectionism is thought to be one of a several coexisting phenotypic traits associated with anorexia nervosa (69, 75).

Interpersonal Distrust

This subscale is comprised of seven questions that assess the respondent’s “general feeling of alienation and reluctance to form close relationships”, as well as their, “reluctance to express thoughts or feelings to others” (69).

Interoceptive Awareness

This subscale is comprised of ten questions that measure the respondent’s “confusion and apprehension in recognizing and accurately responding to emotional states”, as well as, “uncertainty in the identification of certain visceral sensations related to hunger and satiety” (69).

Maturity Fears

This subscale is comprised of eight questions that assess the respondent’s “desire to retreat to the security of childhood” (69).
Asceticism

This subscale is comprised of eight questions that measure the respondent’s “tendency to seek virtue through the pursuit of spiritual ideals such as self-discipline, self-denial, self-restrain, self-sacrifice, and control of bodily urges” (69).

Impulse Regulation

This subscale assesses the respondent’s “tendency toward impulsivity, substance abuse, recklessness, hostility, destructiveness in interpersonal relationships, and self-destructiveness” (69).

Social Insecurity

This subscale measures the respondent’s “belief that social relationships are tense, insecure, disappointing, unrewarding, and generally of poor quality” (69).

EDI-2 SCORING

Respondent’s indicate their response to each of the 91 items by marking one of the 6 forced choice responses, “always,” “usually,” ”often,” ”sometimes,” “rarely,” or “never,” on the answer sheet provided (2). Positively scored items are weighted as follows: Always = 3, Usually = 2, Often = 1, Sometimes = 0, Rarely = 0, Never = 0. Reversed-scored items, indicated by an asterisk, are
weighted as follows: Never = 3, Rarely = 2, Sometimes = 1, Often = 0, Usually = 0, Always = 0. A score of 3 indicates the response is farthest in the “symptomatic” direction, a score of 0 indicates the response is farthest in the “asymptomatic” direction, with a score of 2 and 1 being in between “symptomatic” and “asymptomatic” respectively. Subscale scores are determined by summing all item scores for an individual subscale. Specific cutoff scores for each individual subscales have not been established. It is left up to the researcher to decide what cutoff score based upon normative data, is most appropriate for their specific study population.

EDI-2 INTERPRETATION

Clinical Populations

The EDI-2 was developed to be used chiefly within a clinical setting as an evaluation tool for symptoms associated with the two eating disorders established at the time, Anorexia Nervosa and Bulimia Nervosa. While the EDI-2 does not allow for a specific diagnosis of either eating disorder, it does prove useful in identifying the unique psychological patterns and symptoms of an individual patient that may warrant clinical intervention (69).

Non-Clinical Populations

The EDI-2 may also prove useful as a screening tool to identify those who may be at risk for developing eating disorders among a non-clinical
Individuals who scored above the appropriate cutoff value could then undergo further testing (i.e., an interview) in order to determine if they met the diagnostic criteria for a particular eating disorder. The original subscales of the EDI-2 have also proven useful in identifying those who have excessive concerns about eating, weight, and dieting (69, 76).

EDI-2 DESCRIPTIVE INFORMATION

The EDI-2 manual provides descriptive information for both the patient and non-patient standardized samples used in the initial validation of the EDI-2. Two separate sources were used for the patient standardization sample. Out of the total patient population, the majority (N=782) were eating disorder patients consistently seen at the eating disorder program at Toronto General Hospital, Toronto Canada. Patients (N=107) were also obtained from two separate eating disorder programs in Michigan: the Michigan State University Eating Disorder Program and the Mid-Michigan Eating Disorder Center. Information on the EDI-2 provisional subscales among eating disorder patients is based solely on the Michigan sample (N=107). A non-patient comparison sample (N = 205), which consisted of mainly first and second year female college students attending Michigan State University, was the only group used in the statistical comparison between eating disorder groups and non-patient females. First and second year psychology students (N=271) at the University of Toronto, is the female comparison
group used in the initial validation of the EDI-2 (77, 78). A female high school sample (N=675) sample of Caucasian, African American, Hispanic, or Asian ethnic background is the only sample discussed in the EDI-2 manual with regards to differences in ethnicity (79). Caucasian females scored slightly lower on the Interpersonal Distrust subscale than non-Caucasian females. Asian females scored slightly higher on the Maturity Fears subscale than all other ethnic groups. No other differences were found among the female sample on all other subscales (2, 79).

EDI-2 NORMATIVE INFORMATION

Differences in EDI-2 norm subscale scores for comparative samples for age, sex, and diagnostic status have been demonstrated in previous studies (e.g., females typically score higher than males, and clinical eating disordered patients score higher than non-patient samples). EDI-2 researchers have suggested that existing norms may be appropriate for non-Caucasian ethnic groups (79). EDI-2 researchers have also acknowledged the need for further research on appropriate norms for non-Caucasian ethnic groups. This thesis study will compare University of Hawai‘i at Manoa subjects with existing profile norms for an eating disorder clinical population and a non-patient female college sample (69).
EDI-2 RELIABILITY

Internal Consistency

A coefficient of internal consistency above .80 for an eating disorder sample was one of the standards used in the development of the final version of the EDI. The reliability coefficient (alphas) for all 8 original subscales were between .83 and .93 for the eating disorder sample (80). The reliability coefficient (alphas) for non-patient college female samples from four separate studies were between .65 and .93 (80-83). The reliability coefficient (alphas) for the provisional subscales were between .70 and .80 for an eating disorder and .44 and .80 for a non-patient college female comparison sample (69).

Test-Retest Reliability

Test-Retest reliability coefficients for the original EDI-2 subscales for non-patient samples reported from three separate studies were between .41 and .97 (84-86).

EDI-2 VALIDITY

Validation of the original EDI-2 was based on two groups: 1) The criterion group (N = 129) consisting of female anorexic (AN) patients from the Clarke Institute of Psychiatry in Toronto, Canada. The patients were classified as either anorexia nervosa restrictive (AN-R; N = 48) or anorexia nervosa bulimic (AN-B; N = 65). 2) The non-patient female comparison (FC) group
(N = 577) consisting of university students from first and second year psychology courses at the University of Toronto. The AN and FC groups were used to develop the original item pool. All items included in the original EDI-2 had to meet three criteria: 1) validity must be exhibited by significantly discriminating between the AN and FC groups, 2) items were to be correlated with their intended subscale to a greater degree than with all other subscales, and 3) the coefficient of internal consistency (Cronbach's alpha) for a subscale must be above .80 for the AN samples. An item-total scale correlation average of .63 was indicative of considerable within-scale common variance among items. Although item-total scale correlations for the EDI-2 provisional subscales were lower in comparison to the original EDI-2 subscales, all items did correlate to a greater degree with the intended subscale than with any other provisional subscales (78).

Content Validity
A group of clinicians, in both the research and clinical field of eating disorders, were brought together to create the original EDI-2 subscales. Each subscale was designed to measure the elements of eating disorders that leading theorists in the field considered significant.
Criterion Validity

All of the original EDI-2 subscales have demonstrated their ability to differentiate between eating disorder and non-clinical individuals. Criterion validity has not yet been demonstrated for the provisional subscales.

Concurrent Validity

Concurrent validity of the original EDI-2 was demonstrated by comparing a patient's self-reported profiles with that of their clinicians. A significant correlation (p < .001) was found between the Anorexia Nervosa patients and their clinicians' ratings for all 8 original EDI-2 subscales. Concurrent validity has not yet been demonstrated for the provisional subscales.

2.3.3 EATING DISORDERS INVENTORY SYMPTOMS CHECK LIST (EDI-SC)

The EDI-2 Symptom Checklist (EDI-SC) [see Appendix H for sample questions] serves as a tool for collecting detailed information regarding weight, weight history, menstrual history, and frequency of specific eating symptoms and exercise patterns. When used in conjunction with the EDI-2, the EDI-SC aids researchers and clinicians in the diagnosis of the subjects' current and historical eating disorder status.
2.3.4 COLLECTION OF OTHER INFORMATION

Other personal data collected included self-reported age, gender, weight and height.

2.4 DATA ANALYSIS

Data analysis was conducted with SAS version fifth edition software (87). Internal consistency reliability estimates for the eleven EDI-2 subscales within the study population were determined by calculating Chronbach Coefficienty alpha’s. Analysis of Variance (ANOVA) using the Least Squares Means test to measure the variation in mean scores for the eleven EDI-2 subscales across ethnic groups. Correlations between Body Mass Index and the Body Dissatisfaction subscale were measured across ethnic groups. Chi-square tests were used for measuring percentile rankings by ethnic groups for the eating and compensatory behaviors measured by the EDI-SC.
CHAPTER 3: RESULTS

3.1 PARTICIPANTS

A total of 105 female participants were recruited from the University of Hawaii at Manoa Psychology department during the spring, summer and fall semesters of 2002. Out of the total sample, only 93 were used in the final data analysis. All other participants were not included due to inadequate ethnic group representation. Based on self-reported ethnic identity, participants were assigned to one of three major ethnic group categories: Asian, Caucasian, and Pacific Islander. The specific ethnic groups identified were collapsed into these three major ethnic group categories due to inadequate group representation for independent analyses. The Japanese participants were analyzed separately from their Asian Counterparts for three reasons:

1. To assess differences between specific ethnic groups within a major ethnic group category.

2. Based on previously reported prevalence rates similar to Caucasian females, increasing incidence rates, and the Westernization of Japan, the Japanese participants were expected to score higher than their non-Westernized Asian Counterparts on the EDI-2 subscales, and similar to their Caucasian counterparts (2, 29, 30).

3. There were enough Japanese participants to be assessed as an independent ethnic group.
A total of four ethnic groups were involved in the final analysis: Asian, Caucasian, Japanese, and Pacific Islander. The sample distribution among the ethnic groups was calculated to be: 40% Asian (N=37) ((Chinese (N=12), Filipino (N=6), Korean (N=10), Vietnamese (N=2), other Asian (N=1), and mixed Asian (N=3), Part Asian (N=3)); 24% Caucasian (N=22); 22% Japanese (N=20); and 15% Pacific Islander (N=14) ((Part Hawai’ian (N=10), Part Samoan (N=2), and Guamanian (N=2)). Mean ages for the ethnic groups were: Asian (age=22), Caucasian (age=23), Japanese (age=21) and Pacific Islander (age=21).

3.2 EDI-2

Among all female participants within the study (N=105), the Cronbach’s alphas for the EDI-2 subscales were: Drive for Thinness =0.86, Bulimia= 0.85, Body Dissatisfaction=0.92, Ineffectiveness=0.81, Perfectionism=0.73, Interpersonal Distrust=0.81, Interoceptive Awareness=0.86, Maturity Fears= 0.82, Asceticism=0.56, Impulse Regulation=0.74, and Social Insecurity=0.68.

The ethnic group means (M) and their standard errors (SE) for all EDI-2 subscales are presented in table 3.1.
TABLE 3.1

EDI-2 Subscale Means and Standard Error of Means by Ethnic Groups

<table>
<thead>
<tr>
<th>EDI Subscale</th>
<th>ASIAN</th>
<th>CAUCASIAN</th>
<th>JAPANESE</th>
<th>PACIFIC ISLANDER</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SE</td>
<td>M</td>
<td>SE</td>
</tr>
<tr>
<td>Drive for Thinness</td>
<td>4.3</td>
<td>0.8</td>
<td>5.0</td>
<td>1.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bulimia</td>
<td>1.7</td>
<td>0.5</td>
<td>2.1</td>
<td>0.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body Dissatisfaction</td>
<td>10.3</td>
<td>1.3</td>
<td>10.7</td>
<td>1.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ineffectiveness</td>
<td>4.8</td>
<td>0.7</td>
<td>2.7</td>
<td>0.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perfectionism</td>
<td>5.7</td>
<td>0.6</td>
<td>7.1</td>
<td>0.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interpersonal Distrust</td>
<td>4.0</td>
<td>0.6</td>
<td>2.2</td>
<td>0.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interoceptive Awareness</td>
<td>3.8</td>
<td>0.8</td>
<td>3.6</td>
<td>0.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maturity Fears</td>
<td>6.4</td>
<td>0.9</td>
<td>3.1</td>
<td>0.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asceticism</td>
<td>4.1</td>
<td>0.5</td>
<td>4.1</td>
<td>0.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impulse Regulation</td>
<td>3.3</td>
<td>0.5</td>
<td>4.1</td>
<td>1.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Insecurity</td>
<td>5.6</td>
<td>0.5</td>
<td>3.5</td>
<td>0.8</td>
</tr>
</tbody>
</table>

Means with different superscripts are significantly different at p < .05 (LSM).

Means with different superscripts are significantly different at p < .01 (LSM).
Drive For Thinness

Ethnic group means for the Drive for Thinness subscale (ranked highest to lowest) were as follows: Pacific Islander (Mean (M)=5.6, Standard Error (SE)=1.6), Caucasian (M= 4.9, SE=1.1), Asian (M=4.3, SE=0.8) and Japanese (M=1.4, SE=0.7). The Japanese group scored significantly lower (p<0.05) from all other groups. No significant differences were found in the mean scores between all other ethnic groups.

Bulimia

Ethnic group means for the Bulimia subscale (ranked highest to lowest) were as follows: Pacific Islander (M=2.3, SE=1.1), Caucasian (M= 2.1, SE=0.9), Asian (M=1.7, SE=0.5) and Japanese (M=0.6, SE=0.3). No significant differences were found in the mean scores between all ethnic groups.

Body Dissatisfaction

Ethnic group means for the Body Dissatisfaction subscale (ranked highest to lowest) were as follows: Pacific Islander (M=12.6, SE=2.2), Caucasian (M= 10.7, SE=1.7), Asian (M=10.3, SE=1.3) and Japanese (M=5.9, SE=1.4). No significant differences were found in the mean scores between all ethnic groups.
Ineffectiveness

Ethnic group means for the Ineffectiveness subscale (ranked highest to lowest) were as follows: Asian (M=4.8, SE=0.7), Pacific Islander (M=4.5, SE=1.7), Caucasian (M=2.7, SE=0.8), and Japanese (M=2.4, SE=0.7). No significant differences were found in the mean scores between all ethnic groups.

Perfectionism

Ethnic group means for the Perfectionism subscale (ranked highest to lowest) were as follows: Pacific Islander (M=7.2, SE=1.1), Caucasian (M=7.05, SE=0.9), Asian (M=5.6, SE=0.6) and Japanese (M=4.3, SE=0.9). No significant differences were found in the mean scores between all ethnic groups.

Interpersonal Distrust

Ethnic group means for the Interpersonal Distrust subscale (ranked highest to lowest) were as follows: Asian (M=4.0, SE=0.6), Pacific Islander (M=2.9, SE=1.1), Caucasian (M=2.2, SE=0.7) and Japanese (M=1.8, SE=0.5). No significant differences were found in the mean scores between all ethnic groups.
Interoceptive Awareness

Ethnic group means for the Interpersonal Distrust subscale (ranked highest to lowest) were as follows: Pacific Islander (M= 4.1, SE=1.8), Asian (M=3.8, SE=0.8), Caucasian (M=3.6, SE=0.9) and Japanese (M=1.5, SE=0.5). No significant differences were found in the mean scores between all ethnic groups.

Maturity Fears

Ethnic group means for the Interpersonal Distrust subscale (ranked highest to lowest) were as follows: Asian (M=6.4, SE=0.9), Pacific Islander (M= 6.1, SE=1.4), Caucasian (M=3.1, SE=0.8) and Japanese (M=3.0, SE=0.5). The Asian ethnic group scored significantly higher (p< 0.05) from the Caucasian and Japanese ethnic groups. The Pacific Islander ethnic group did not score significantly different from any other ethnic group.

Asceticism

Ethnic group means for the Interpersonal Distrust subscale (ranked highest to lowest) were as follows: Pacific Islander (M= 6.4, SE=1.2), Caucasian (M=4.1, SE=0.8), Asian (M=4.1, SE=0.5), and Japanese (M=2.1, SE=0.4). The Pacific Islander ethnic group scored significantly higher (p< 0.01) from all other ethnic groups. The Japanese ethnic group scored significantly lower (p< 0.01) from all other ethnic groups.
Impulse Regulation

Ethnic group means for the Interpersonal Distrust subscale (ranked highest to lowest) were as follows: Caucasian (M= 4.0, SE=1.2), Asian (M=3.3, SE=0.5), Pacific Islander (M=2.1, SE=1.3) and Japanese (M=1.7, SE=0.6). No significant differences were found in the mean scores between all groups.

Social Insecurity

Ethnic group means for the Interpersonal Distrust subscale (ranked highest to lowest) were as follows: Asian (M= 5.6, SE=1.8), Pacific Islander (M=4.2, SE=0.8), Caucasian (M=3.5, SE=0.9) and Japanese (M=2.6, SE=0.5). The Asian ethnic group scored statistically higher (p< .05) than the Caucasian and Japanese ethnic groups. No significant differences were found in the mean scores between all other ethnic groups.

3.2 BODY MASS INDEX

Body Mass Index (BMI) means (calculated as the ratio of weight in kilograms to the square of the height in meters) and their standard errors by ethnic groups were calculated as being (ranked highest to lowest): Pacific Islander (M=24.1, SE=1.2), Caucasian (M=22.8, SE=0.6), Japanese (M=21.5, SE=0.9), and Asian (M=20.7, SE=0.3). The Pacific Islander ethnic group BMI was significantly (p<.01) higher than the Japanese and Asian ethnic groups. The Caucasian ethnic group BMI was significantly (p<.01) higher than the Asian
ethnic group. There were no significant differences in BMI means between the Caucasian and Pacific Islander groups, or between the Asian and Japanese groups. Body Mass Index means and standard errors by ethnic groups are presented in Table 3.2. A positive linear relationship was demonstrated between BMI and the Body Dissatisfaction subscale for the Japanese, Caucasian the Pacific Islander ethnic groups, but not the Asian ethnic group (Figure 3.1). A significant correlation \( r=0.531, p<.05 \) was shown between BMI and the Body Dissatisfaction subscale in the Caucasian ethnic group alone.

![Figure 3.1](image_url)  
**Figure 3.1** Relationship Between Body Mass Index (BMI) and Body Dissatisfaction Scores by Ethnic Groups
<table>
<thead>
<tr>
<th></th>
<th>ASIAN (N = 37)</th>
<th>CAUCASIAN (N = 22)</th>
<th>JAPANESE (N = 20)</th>
<th>PACIFIC ISLANDER (N = 14)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SE</td>
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<td>SE</td>
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<td>BMI</td>
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<td>0.3</td>
<td>22.8&lt;sup&gt;ab&lt;/sup&gt;</td>
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</tr>
</tbody>
</table>

Note. Means with different superscripts are significantly different at \( p < .01 \) (LSM).
3.3 EDI-SC

Dieting

 Ranked from highest to lowest: seventy percent (70%) of both the Asian and Caucasian ethnic group, thirty-five (35%) of the Pacific Islander ethnic group, and twenty-eight percent (28%) of the Japanese group admitted to restricting their food intake due to concerns about body size or weight (Figure 3.2).

![Bar chart showing percent of participants who have restricted food intake due to concerns about body size and weight by ethnic groups.](image)

**Figure 3.2** Percent of Participants Who Have Restricted Food Intake Due to Concerns about Body Size and Weight by Ethnic Groups
Binge Eating

Ranked from highest to lowest: thirty-five percent (35%) of the Caucasian ethnic group, thirty percent of the Asian ethnic group (30%), twenty-nine percent (29%) of the Pacific Islander ethnic group and fourteen percent (14%) of the Japanese ethnic group admitted to having an episode of eating an unusually large amount of food at one time (Figure 3.3).

Figure 3.3 Percent of Participants Who Have Had an Episode of Binge Eating by Ethnic Groups
Purging

Ranked from highest to lowest: seventeen percent (17%) of the Caucasian ethnic group, ten percent (10%) of the Japanese group, and three percent (3%) of both the Asian and Pacific Islander ethnic groups admitted to having vomited in order to get rid of food consumed (Figure 3.4).

Figure 3.4  Percent of Participants Who Admitted to Having an Episode of Purging by Ethnic Groups
Laxatives

Ranked from highest to lowest: seventeen percent (17%) of the Caucasian ethnic group, fifteen percent (15%) of the Pacific Islander ethnic group, ten percent (10%) of the Japanese ethnic group, and three percent (3%) of the Asian ethnic group admitted to having used laxatives to control their weight or to get rid of food consumed (Figure 3.5).

Figure 3.5  Percent of Participants Who Have Used Laxatives to Control Their Weight by Ethnic Groups
Diet Pills

Ranked from highest to lowest: forty-seven percent (47%) of the Caucasian ethnic group, fifteen percent (15%) of the Japanese group, and fourteen percent (14%) of both the Asian and Pacific Islander ethnic groups admitted to having taken diet pills to control their weight (Figure 3.6).

Figure 3.6  Percent of Participants Who Have Used Diet Pills to Control Their Weight by Ethnic Groups
Diuretics

Out of all ethnic groups, only the Pacific Islander group, seven percent (7%), admitted to having taken diuretic pills to control their weight (Figure 3.7).

Figure 3.7 Percent of Participants Who Have Used Diuretics to Control Their Weight by Ethnic Groups
4.1 EDI-2

The reliability coefficients (alphas) of the original EDI-2 subscales (Drive for Thinness, Bulimia, Body Dissatisfaction, Ineffectiveness, Perfectionism, Interpersonal Distrust, Interoceptive Awareness, and Maturity Fears) were satisfactory within the present study population. Although the reliability coefficients for the provisional subscales (Asceticism, Impulse Regulation, and Social Insecurity) were not satisfactory, the low values were consistent with those reported for other female college comparison samples in the EDI-2 Manual.

Significant differences were found between the ethnic groups on four of the eleven EDI-2 subscales: Drive for Thinness, Maturity Fears, Asceticism, and Social Insecurity. The Japanese mean scores were significantly different from their Asian Counterparts on these same four subscales. These significant group differences suggest that ethnic identity may influence an individual's risk for experiencing psychological symptoms associated with eating disorders.

An unexpected trend was demonstrated between the Japanese ethnic group and all other groups. The Japanese ethnic group scored lower than the
Asian, Caucasian, and Pacific Islanders ethnic groups on all eleven EDI-2 subscales.

The low scores on the EDI-2 for the Japanese ethnic group may be due in part to four theories:

- A strong cultural association between psychological and physical illness has been demonstrated within the Japanese culture. Therefore, Japanese females may be more likely to underreport eating disorder symptoms due to the fear of being labeled weak, and thus bringing social shame, or "haji", upon their family (88, 89).

- Japanese females are genetically less vulnerable to the development of eating disorders due to their smaller physiques and consequently less body dissatisfaction than their Caucasian and Pacific Islander counterparts. However, this theory does not explain the significant difference found on the Drive for Thinness scale between the Japanese females and their Asian peers. Japanese females may also lack the currently unknown genetic components that predispose their peers of other ethnic origins to the development of eating disorders.

- Japanese females have learned disordered eating habits from both their family and their peers, thus normalizing their eating patterns.

- Eating disorder symptoms among Asians have been attributed to highly traditional Asian family environments as well as high levels of perceived maternal control (90, 91). The Japanese females in the
present study any come from less traditional Asian family environments, or they may perceive lower levels of maternal control than their Asian peers.

- The EDI-2 is not a sensitive tool for measuring eating disorders among the Japanese population, allowing for a high occurrence of false negatives.

The significantly higher Asian ethnic group mean scores on the Maturity Fears subscale were consistent with scores reported by Rosen and Silberg in which Asian female adolescents scored higher on the Maturity Fears subscale than Caucasian, African American and Hispanic peers (79). There have been no previous studies reported in the literature assessing the relationship between maturity fears and eating disorders among Pacific Islander women. High scores on the Maturity Fears subscale were reported by Gordon as being associated with patterns of maternal perfectionism and self-sacrifice in conjunction with strong paternal entitlement (92). It is possible that these same associations apply to the Asian and Pacific Islander females who scored high on the Maturity Fears subscale.

The reliability and validity of the Asceticism subscale has not yet been documented. The reliability coefficient (alpha) for the Asceticism subscale within the present study population was calculated to be an unsatisfactory
Very little research has been conducted on the Asceticism subscale to date. Families of anorexics have been shown to uphold religious themes such as ethical codes of sacrifice, loyalty, and sexual denial (93). Significantly higher scores on the Asceticism subscale for the Pacific Islander ethnic group compared to all other ethnic groups may be explained in part by a possible relationship between asceticism and their religious practices. The addition of a question assessing religious identity would have provided further insight into the relationship between the high Asceticism subscale scores and religious practices.

Both the Asian ethnic group and the Pacific Islander group scored significantly higher on the Social Insecurity subscale than their Japanese and Caucasian peers. These findings may suggest that the symptoms being tapped by the subscale are of similar origin within both ethnic groups. As with the Asceticism subscale, reliability, and validity for the Social Insecurity subscale has not been documented. The reliability coefficient (alpha) was for the Social Insecurity subscale within the present study population was calculated to be an unsatisfactory 0.68. Therefore, discretion is warranted in the interpretation of mean group scores on the Social Insecurity subscale.

Re-analysis of the EDI-2 subscale scores was conducted using a combined Japanese and Asian ethnic group in order to determine what group
differences would have resulted if three groups (Asian, Caucasian, and Pacific Islander) had been used in the original analyses instead of four. Significant differences were found between the three ethnic groups (Asian, Caucasian, and Pacifica Islander) on two of the eleven EDI-2 subscales:

- Perfectionism subscale: the Caucasian ethnic group and the Pacific Islander ethnic group scored significantly higher than the Asian ethnic group.
- Asceticism subscale: the Pacific Islander ethnic group scored significantly higher than the Asian and Caucasian ethnic group.

Based on the differences in significant findings between the original data analysis using four groups and the second data analysis using three groups, it can be reasoned that an analysis of the EDI-2 scores between all ethnic identity groups represented (i.e., Chinese, Japanese, and Korean) would have resulted in greater significant group differences.

4.2 BODY MASS INDEX

The BMI means for all ethnic groups fell within the normal range of 18.5 to 24.9 kg/m². The Pacific Islander ethnic group BMI mean was at the high end of the normal range (24.1 kg/m²). BMI group means for the Caucasian and Pacific Islander ethnic groups were expected to be higher compared their Asian and Japanese peers based on two assumptions:
• Genetic determinants predetermine Asian and Japanese females to have smaller physiques than their Caucasian and Pacific Islander counterparts.

• Differences in cultural food preferences and dietary habits allow for the maintenance of consistent lower weights among the Asian and Japanese ethnic groups.

The significantly higher BMI group means for the Pacific Islander group compared to the Caucasian ethnic group was also expected based on two assumptions:

• Pacific Islanders portray a greater acceptance for heavier physiques in comparison to their Caucasian peers.

• A greater emphasis placed on the value of meals as a means of socializing with family, or “Ohana”, and friends may discourage Pacific Islanders from certain dieting behaviors, i.e. skipping meals.

Body Mass Index was tested for a correlation with the Body Dissatisfaction subscale based on the premise that BMI is a strong predictor of body dissatisfaction and body fatness (9, 26, 94). The premise held true for the Caucasian, Japanese and Pacific Islander groups, but not for the Asian ethnic group. The high mean scores on the Body Dissatisfaction subscale (Asian > Japanese) relative to their lower BMI mean (Asian < Caucasian < Pacific

61
Islander) may be due in part to a true overall dissatisfaction with shape. Hill and Bhatti reported high levels of body dissatisfaction among British adolescents of Asian origin to be positively associated with a highly traditional family environment (91). Ogden and Chanana reported body dissatisfaction among Asian females to be positively associated with having a father who preferred a thinner body, the siblings ratings of a non-traditional role for women, degree of unity within the family concerning the value of competitiveness and the educational level of the head of the family (95). These findings support the theory that the Asian ethnic group within the present study may be experiencing relatively high levels of body dissatisfaction due to both intercultural and intra-familial conflict.

In interpreting the BMI between ethnic groups it is important to note that BMI was based on self-reported height and weight. The BMI calculations may not be true reflection of the individual participant's current height and weight. Therefore, the ethnic group BMI means may not reflect true body measures.

4.3 EDI-SC

Overall, a higher percentage of the Caucasian ethnic group admitted to having used both appropriate (dieting) and inappropriate (purging, laxatives, and diet pills) than all other ethnic groups. However, all groups reported
previous use of both appropriate and inappropriate compensatory behaviors for weight loss and weight maintenance. Dieting may have been reported as the preferred weight control method due less shame associated with reporting the behavior in comparison to all other compensatory behaviors. It is interesting to note that the Asian ethnic group, the leanest of all the groups based on BMI means, reported more dieting to control weight than did the Pacific Islanders, the heaviest of all the groups based on BMI means. This may signify a greater Drive for Thinness among the Asian ethnic group than exhibited by their mean subscale scores. There is much room for ambiguity on the dieting and binging questions. Both are subjective in that a person who chronically restricts their caloric intake will have normalized the dieting behavior and would not therefore feel that answering yes to the dieting questions would be appropriate when in reality it is. On the opposite end of the spectrum, a person who chronically overeats will have normalized the behavior and would not therefore feel that answering yes to the binging questions would be appropriate when in reality it is.

Unfortunately the majority of the participants answered only the first question within each weight loss category on the symptoms checklist, which assesses past use of weight loss behaviors. Current use of a specific weight loss behavior is assessed in questions four through ten within each weight loss category. Although participants may have admitted to having used
various weight control methods in the past, it is impossible to speculate the
degree to which they are currently practicing these weight control methods
based on the limited amount of information volunteered. It is unknown why
the participants chose not to complete all questions within each weight loss
category. Perhaps they are not currently practicing the weight control
methods, and therefore did not feel the remaining questions applied.
Perhaps the questions were inadvertently overlooked, or were perceived as
being too personal. An interview would have allowed for a more consistent
completion of all items on the EDI-SC.

4.4 CAVEATS TO INTERPRETING THE EDI-2

Weaknesses and limitations of the EDI-2 should be considered when
interpreting the ethnic group mean subscale scores.

- Self-report instruments are vulnerable to inaccurate reporting,
  response style bias, denial and defensiveness. Ideally, an interview by
  a psychologist trained in diagnosing eating disorders would be
  conducted along with the EDI-2, allowing for more supportive validity
  of the resulting data. A structured interview would also allow for a
  more exhaustive assessment of specific psychopathology and for
  clarification of responses.

- The EDI-2 was originally designed as a tool for differentiating between
  a clinical population and a non-patient population. Thus, one cannot
deduce that elevated subscale scores within a non-patient population indicate that the same psychopathology exists as would be inferred for a patient population.

• The EDI-2 is not an exhaustive measure of all psychopathological characteristics of Anorexia Nervosa and Bulimia Nervosa. Measures of other traits and personality features associated with eating disorders, such as depression, anxiety, obsessionality, or substance abuse would enhance understanding of the psychological functioning of a eating disorder patient population.

• The EDI-2 was not designed to measure the most recently recognized eating disorder, Binge-Eating Disorder, which may be more prevalent within a population than Anorexia Nervosa or Bulimia Nervosa.

• Validation of the original EDI-2 subscales for a non-patient population is based on the scores of first and second year psychology students. Thus, norm values for a non-patient female college population may be biased towards the attitudes of female psychology students rather than those of a general non-patient college female population.

• Internal consistency, reliability and validity for the provisional subscales (Asceticism, Impulse Regulation, and Social Insecurity) have not yet been demonstrated.

• Normative values for the EDI-2 subscales for non-Caucasian ethnic groups are currently unknown.
• The EDI-2 was designed to assess symptoms associated with eating disorders based on the research conducted on primarily Caucasian females. Symptoms not measured by the EDI-2 may be of significant relevance when distinguishing between an eating disorder individual and a non-clinical individual within other ethnic groups.

4.7 OTHER LIMITATIONS OF THE STUDY

• Participants were recruited through the psychology department. Therefore, the mean scores for the ethnic groups studied may be biased towards the attitudes of female psychology students, rather than attitudes of a general non-patient multi-ethnic college female population.

• Participants were compensated for their time by being awarded extra credit for the psychology course in which they were enrolled. Knowing that perfectionism is a symptom associated with eating disorders, the participants who volunteered for the EDI-2 study may portray more symptoms of eating disorders than their peers who did not volunteer.

• The majority of the participants voluntarily wrote their name on the EDI-2 and EDI-SC despite the direction not to disclose any form of identity stated in the oral consent form. Participants may have not answered truthfully if they questioned the anonymity and confidentiality of their answers.
• The combining of the specific ethnic groups (i.e., Chinese and Korean) into larger, more general ethnic groups (i.e., Asian), may have masked differences between the various ethnic groups.

4.6 FUTURE DIRECTIONS

• Future researchers should repeat this study and extend it by recruiting participants across the entire University of Hawai‘i at Manoa population. A larger sample size would allow for comparisons among the specific ethnic groups found on campus. The development of EDI-2 norm values for non-Caucasian ethnic group populations will allow for more appropriate and accurate assessment of mean subscale scores among the different ethnic groups represented at the University of Hawai‘i at Manoa. The addition of an interview would serve to minimize uncertainty and incompleteness of the questionnaires.

• The development and validation of culturally sensitive measurements for eating disorders for non-Caucasian ethnic groups is of great need for both researchers and the clinicians within the field of eating disorders.

• Answers to the role of genetics in the etiology of eating disorders will allow researchers and clinicians to determine which ethnic groups, if any, are at an increased risk for developing Anorexia Nervosa, Bulimia Nervosa or Binge-Eating Syndrome. This would allow for early
intervention efforts to be implemented before the illness has the chance to develop and progress within the individual.
CONCLUSION

Although the results of this study cannot be inferred upon the entire University of Hawai‘i at Manoa student population, or even among the students within the Psychology Department, trends were observed that clearly demonstrate differences in eating disorder symptoms as measured by the EDI-2 among the ethnic groups represented in the present study. Significant group differences were found on four of the eleven EDI-2 subscales (Drive for Thinness, Maturity Fears, Asceticism, and Social Insecurity). The Pacific Islander ethnic group tended to score on the high end of the EDI-2 subscales, while the Japanese ethnic group scored on the low end, with the Caucasian and Asian ethnic groups in between. These significant group differences suggest that ethnic identity may influence an individual's risk for developing psychological symptoms associated with eating disorders as measured by the Eating Disorder Inventory-2 (EDI-2).

All groups reported evidence of previous use of inappropriate compensatory weight maintenance and weight loss mechanisms. Further research is needed to determine the efficacy of the Eating Disorder Inventory (EDI-2) and the Eating Disorder Inventory Symptoms Checklist (EDI-SC) subscales especially among non-Caucasian ethnic groups. Without means to appropriately and accurately measure eating disorders, true prevalence and incidence rates among non-Caucasian ethnic groups continue to remain unknown. Consequently, eating disorders within non-Caucasian populations
undiagnosed and untreated within these vulnerable populations. As researchers and clinicians begin to identify high-risk non-Caucasian ethnic groups, further studies will be needed to develop culturally appropriate materials, curricula and intervention programs specific for the populations targeted.
APPENDIX A

Diagnostic Criteria for Anorexia Nervosa

A. Refusal to maintain body weight at or above a minimally normal weight for age and height (e.g., weight loss leading to maintenance of body weight less than 85% of that expected; or failure to make expected weight gain during period of growth, leading to body weight less than 85% of that expected).

B. Intense fear of gaining weight or becoming fat, even though underweight.

C. Disturbance in the way in which one's body weight or shape is experienced, undue influence of body weight or shape on self-evaluation, or denial of the seriousness of the current low body weight.

D. In postmenarcheal females, amenorrhea, i.e., the absence of at least three consecutive menstrual cycles. (A woman is considered to have amenorrhea if her periods occur only following hormone, e.g., estrogen, administration.)

Specify type:

Restricting Type: during the current episode of Anorexia Nervosa, the person has not regularly engaged in binge-eating or purging behavior (i.e., self-induced vomiting or the misuse of laxatives, diuretics, or enemas)

Binge-Eating/Purging Type: during the current episode of Anorexia Nervosa, the person has regularly engaged in binge-eating or purging behavior (i.e., self-induced vomiting or the misuse of laxatives, diuretics, or enemas)

APPENDIX B

Diagnostic Criteria for Bulimia Nervosa

A. Recurrent episodes of binge eating. An episode of binge eating is characterized by both of the following:

(1) eating, in a discrete period of time (e.g., within any 2-hour period), an amount of food that is definitely larger than most people would eat during a similar period of time and under similar circumstances.

(2) a sense of lack of control over eating during the episode (e.g., a feeling that one cannot stop eating or control what or how much one is eating)

B. Recurrent inappropriate compensatory behavior in order to prevent weight gain, such as self-induced vomiting; misuse of laxatives, diuretics, enemas, or other medications; fasting; or excessive exercise.

C. The binge eating and inappropriate compensatory behaviors both occur, on average, at least twice a week for 3 months.

D. Self-evaluation is unduly influenced by body shape and weight.

E. The disturbance does not occur exclusively during episodes of Anorexia Nervosa.

Specify type:

Purging Type: during the current episode of Bulimia Nervosa, the person has regularly engaged in self-induced vomiting or the misuse of laxatives, diuretics, or enemas

NonPurging Type: during the current episode of Bulimia Nervosa, the person has used other inappropriate compensatory behaviors, such as fasting or excessive exercise, but has not regularly engaged in self-induced vomiting or the misuse of laxatives, diuretics, or enemas)

APPENDIX C

Eating Disorder Not Otherwise Specified

1. For females, all of the criteria for Anorexia Nervosa are met except that the individual has regular menses.

2. All of the criteria for Anorexia Nervosa are met except that, despite significant weight loss, the individual's current weight is in the normal range.

3. All of the criteria for Bulimia Nervosa are met except that the binge eating and inappropriate compensatory mechanisms occur at a frequency of less than twice a week or for a duration of less than 3 months.

4. The regular use of inappropriate compensatory behavior by an individual of normal body weight after eating small amounts of food (e.g., self-induced vomiting after the consumption of two cookies).

5. Repeatedly chewing and spitting out. But not swallowing, large amounts of food.

6. Binge-eating disorder: recurrent episodes of binge eating in the absence of the regular use of inappropriate compensatory behaviors characteristic of Bulimia Nervosa (see Appendix D).

APPENDIX D

Research Criteria for Binge-Eating Disorder

A. Recurrent episodes of binge eating. An episode of binge eating is characterized by both of the following:

(1) eating, in a discrete period of time (e.g., within any 2-hour period), an amount of food that is definitely larger than most people would eat during a similar period of time and under similar circumstances.
(2) a sense of lack of control over eating during the episode (e.g., a feeling that one cannot stop eating or control what or how much one is eating)

B. The binge-eating episodes are associated with three (or more) of the following:

(1) eating much more rapidly than normal
(2) eating until feeling uncomfortably full
(3) eating large amounts of food when not feeling physically hungry
(4) eating alone because of being embarrassed by how much one is eating
(5) feeling disgusted with oneself, depressed, or very guilty after overeating

C. Marked distress regarding binge eating is present.

D. The binge eating occurs, on average, at least 2 days a week for 6 months.

Note: The method of determining frequency differs from that used for Bulimia Nervosa; future research should address whether the preferred method of setting frequency threshold is counting the number of days on which binges occur or counting the number of episodes of binge eating.

E. The binge eating is not associated with the regular use of inappropriate compensatory behaviors (e.g., purging, fasting, excessive exercise) and does not occur exclusively during the course of Anorexia Nervosa or Bulimia Nervosa.

APPENDIX E

Oral Consent Form

The Eating Disorders Inventory Masters Research Survey

You are being asked to participate in a research project intending to measure the incidence of disordered eating: attitudes, feelings and behaviors among multi-ethnic college men and women. Please read through the oral consent form before proceeding to fill out the EDI-2 and EDI-SC questionnaires.

1. I understand that although I will not personally benefit from the results of the EDI-2 University of Hawaii survey, my participation as one of the 500 students surveyed will help to further the understanding of the attitudes, feelings, and behaviors related to eating and other areas in general.

2. I understand that my participation is voluntary and I may withdraw from the project at any time without any negative consequence.

3. I understand that the survey is completely anonymous. You do not have to answer any questions that make you uncomfortable, but we do encourage you to answer all the questions. There are no right or wrong answers.

4. I understand that the survey will take approximately 30 – 35 minutes or less.

5. I understand that there are no reasonably foreseeable risks or discomforts associated with completing the survey.

6. I understand that, upon completion of the survey all information disclosed may be used by Dr. Robert Randall, Shannon Montgomery, and Dr. David Garner in any manner they determine, including, but not limited to, use in presentations and publications.

7. If I have questions about the research project or procedures, I know I can contact Shannon Montgomery (808) 223-9983 or via e-mail at Sunshine139@excite.com. I also understand that this research is anonymous and I cannot be linked in any way to the survey information.

8. If I feel I have not been treated according to the descriptions in this form, or that my rights as a participant in research have been violated during the course of this project, I know I can contact the office for the Committee on Human Studies, Spalding 252 (808) 956-5007.

9. I hereby agree to participate in the research survey conducted by Dr. Robert Randall and Shannon Montgomery in connection with the EDI-2 thesis survey.

Please do not sign your name or any identifiable signature.
APPENDIX F

ETHNIC IDENTITY QUESTIONNAIRE

Supplemental Questionnaire for Eating Disorder Study

From the list below, please indicate your ethnic or racial background. Please include the numbers of all that apply to you. If any of your ethnic or racial backgrounds are not listed below, please write them in.

From the list below, please indicate which best describes your ethnic identity. Please list only the ONE for which you MOST identify. If the ethnicity for which you most identify is not listed below, please write it in.

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</tr>
<tr>
<td>73 Mixed Caucasian</td>
</tr>
<tr>
<td>74 Other Caucasian</td>
</tr>
</tbody>
</table>
APPENDIX G

EDI-2

(Sample Questions)

Drive for Thinness
   • I am preoccupied with the desire to be thinner.

Bulimia
   • I have gone on eating binges where I felt that I could not stop.

Body Dissatisfaction
   • I think that my thighs are too large.

Ineffectiveness
   • I feel alone in the world.

Perfectionism
   • I feel that I must do things perfectly or not do them at all.

Maturity Fears
   • I wish that I could be younger.

Asceticism Subscale
   • I am ashamed of my human weaknesses.

Impulse Regulation
   • I feel like I must hurt myself or others.

Social Insecurity Subscale
   • I would rather spend time by myself than with others.

APPENDIX H

EDI-SC
(Sample Questions)

A. Dieting
   - Have you ever restricted your intake due to concerns about body size or weight?

B. Binge Eating
   - Have you ever had an episode of eating an amount of food that others would regard as unusually large?

C. Purging
   - Have you ever tried to vomit after eating in order to get rid of food eaten?

D. Laxatives
   - Have you ever used laxatives to control your weight or "get rid of food?"

E. Diet Pills
   - Have you ever taken diet pills?

F. Diuretics
   - Have you ever taken diuretics (water pills) to control your weight?

47. Fromberg PM. Is vegetarianism a diet or an ideology? CMAJ 1993;149:269.


