

**BODY IDEALS AND BODY DISSATISFACTION AMONG A COMMUNITY
SAMPLE OF 1330 ETHNICALLY DIVERSE ADOLESCENTS ON KAUI, HAWAII**

**A THESIS SUBMITTED TO THE GRADUATE DIVISION OF THE
UNIVERSITY OF HAWAII IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF**

MASTER OF SCIENCE

IN

BIOMEDICAL SCIENCES

AUGUST 2007

By

Tiffany K. Niide

Thesis Committee:

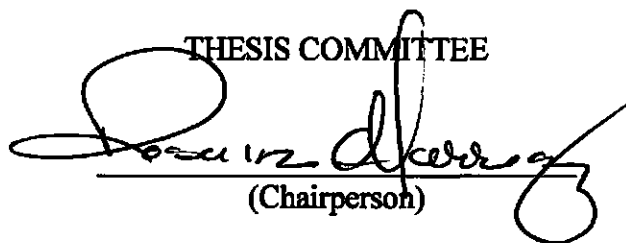
Rosanne Harrigan, Chairperson

Alice Tse

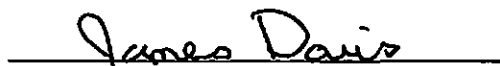
James Davis

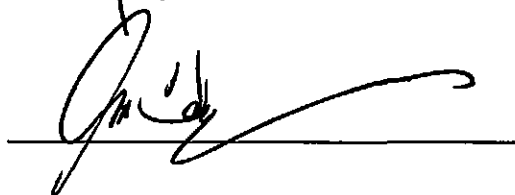
We certify that we have read this thesis and that, in our opinion, it is satisfactory in scope and quality as a thesis for the degree of Master of Science in Biomedical Sciences.

THESIS COMMITTEE



(Chairperson)





ACKNOWLEDGMENTS

Funding and support for this project was provided by:

- **Clinical Research Education and Career Development (CRECD) in Minority Institutions.” National Center for Research Resources National Institutes of Health (grant no. 1 R25 RR019321)**
- **Florelle’s ‘Ohana (nonprofit community-based program, Island of Kauai, Hawaii)**
- **University of Hawaii – John A Burns School of Medicine:**
 - **Department of Psychiatry**
 - **Department of Pediatrics: University Clinical, Education & Research Associates (HRSA/Dept. of Interior grant no. D55HP05143)**
 - **Pacific Telehealth and Technology Hui (contract no. 1435-04-03-CT-87084)**

ABSTRACT

Introduction: Body dissatisfaction (BD), a robust risk factor for eating disorders, is occurring at younger ages and among a wider range of socioeconomic and cultural groups.

Objectives: To describe body ideals and prevalence of body dissatisfaction among an ethnically diverse population of male and female students. **Method:** An anonymous cross-sectional survey including biographical information and the figure drawing screen was distributed to 7th through 12th grade students. **Results:** Of the 1330 completed surveys, 19% of students were significantly dissatisfied with their bodies. Males were at greater risk than females for total BD (25.8% vs. 13.3%; $p < 0.0001$) and for BD in the direction of wanting to be larger (11.3% vs. 2.3%; $p < 0.0001$). Males and females were at similar risk for BD in the direction of wanting to be thinner (14.6% vs. 11.6%; $p = 0.11$). Prevalence of BD in the direction of wanting to be thinner was statistically different among ethnic groups. There were no significant differences in BD based on grade level or SES. **Conclusions:** BD is common among male and female adolescents, with certain ethnic groups being at higher risk. Studies to illustrate risk and protective factors among different groups may help tailor prevention strategies. Further research is also needed to better understand the mechanisms for and potential outcomes of the bidirectional BD seen in males.

TABLE OF CONTENTS

Acknowledgements.....	iii
Abstract.....	iv
List of Tables.....	vi
List of Figures.....	vii
Chapter 1: Introduction.....	1
Definition of Body Dissatisfaction.....	1
Etiology and Proposed Pathways to BD.....	1
Consequences of BD.....	3
BD Among Children and Adolescents.....	4
BD and Gender.....	4
BD and Socio-cultural Factors.....	4
Chapter 2: Methods.....	6
Setting.....	6
Procedures.....	6
Measures.....	7
Analysis.....	7
Chapter 3: Results.....	8
Sample.....	8
Body Ideals.....	9
Body Dissatisfaction.....	10
Logistic Regression Models.....	12
Chapter 4: Discussion and Implications.....	14
Chapter 5: Conclusion.....	17
References.....	18

LIST OF TABLES

<u>Table</u>	<u>Page</u>
1. Student Characteristics.....	8
2. Student Ethnicity.....	9
3. Body Ideal by Gender.....	10
4. Odds of Total BD.....	13

LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
1. Caregiver Socioeconomic Status (SES).....	9
2. Body Ideal by Gender.....	10
3. Total BD Among All Students and by Gender.....	11
4. Percentage of BD in Boys.....	11
5. Percentage of BD in Girls.....	11
6. BDsm by Ethnicity.....	12
7. Odds of BD by Gender and Ethnicity.....	13

CHAPTER 1: INTRODUCTION

Definition of Body Dissatisfaction: Body dissatisfaction (BD), simply defined, is the degree to which individuals are unhappy with their own body and desire to resemble a figure closer to their ideal body. There has been a large amount of research examining the potential etiologies as well as the associated outcomes of BD.

Etiology and Proposed Pathways to BD: BD has been shown to be influenced by a number of factors including individual, family, peer, and social attributes.

Individual physical and psychological characteristics have both been shown to influence BD. One example is BMI, which has been strongly correlated with BD and also been shown in longitudinal studies to be a unique predictor for future BD (Paxton 2006, Field 2001). Height and weight were also found to independently predict BD and eating disorder scores, with absolute values being predictive for boys and comparative values being predictive for girls (Gardner 2000). Pubertal development and Tanner stage has also been found to predict onset of bulimic purging behaviors in adolescent females (Field 1999). Psychological characteristics also influence development of and degree of BD. Self esteem and negative affect have both been shown in prospective studies to predict BD and higher eating disorder scores in children (Paxton 2006, Gardner 2000).

Family environment and values have also been shown to play an important role in BD. In a prospective study, children's perceptions of parental concern about weight predicted eating disorder scores for boys and girls (Gardner 2000). Fathers with high levels of BD have also been shown to predict girls' dieting and weight change behaviors and

parental over-control over eating was also associated with higher levels of thin body preoccupation and social pressure to be thin (Agras 2007).

There have also been a number of studies documenting the importance of peer perceptions, actions, and behaviors on BD. Weight related teasing by peers has been shown in prospective studies to increase risk for development of BD in early adolescent females (Paxton 2006). BD has also been correlated with having peers who are currently dieting (Jones 2004, Paxton 1999 and 2006). A prospective study of 6982 adolescent females found that importance of thinness to peers was predictive of beginning to purge at least monthly (Field 1999). In a study of 531 adolescents, perceived pressure to be thin from peers predicted BD (Presnell 2004).

Socio-cultural environment and media exposure have long been implicated in the pervasive problem of BD and pathological eating behaviors. The media portrays images of thin women and muscular men with the connotation that having this ideal body equates with being lovable, successful and happy. A randomized controlled study of 125 college females found that exposure to thin-ideal magazine images increased BD compared to exposure to neutral images (Hawkins 2004). Trying to look like media images was also found to predict bulimic symptoms among adolescent females (Field 1999). International studies have also shown the link between exposure to western ideals and increasing rates of eating disorder risks, symptoms, and disorders in many countries (Becker 2004, Greenberg 2007, Eddy 2007).

Consequences of BD: Understanding the potential etiologies and pathways of BD is important because of the multitude of serious negative outcomes, psychological and physical, that are associated with BD. BD is one of the most robust risk factors for eating disorders (Stice 2002), which are often cited as having the highest morbidity and mortality of the mental health illnesses (Anzai 2002, Steinhausen 2002, Rosenblum 2002, Agras 2001). A prospective study of 216 children ages 6-14 found that BD, as measured with figure drawings, predicted higher eating disorder scores at age 11 and persisted through age's 13 and 14 (Gardner 2000).

BD is also associated with weight gain and obesity by increasing binge eating (Neumark-Sztainer 2006, Johnson 2005) and decreasing levels of physical activity (Neumark-Sztainer 2004, Douthitt 1994). In a cross-sectional study of 808 obese adults, best fit models showed BD influenced binge eating through 2 pathways, negative affect and dietary restraint (Womble 2001).

BD also has been shown to influence mood and to predict negative affect and onset of depressive symptoms. BD at baseline (along with dietary restraint and bulimic symptoms) was found to predict onset of depression at 4 year follow-up in a sample of 1,124 female adolescents (Stice 2000). In a prospective study of over 2500 adolescents, BD was found to be a unique predictor of depressed mood and low self esteem for early adolescent females and for mid-adolescent males (Paxton 2006). A longitudinal study also found that BD at age 13 predicted increased suicide attempts at 2 year follow-up (Rodriguez-Cano 2006) though the largest predictor was previous suicidal thoughts. A

large study of 3886 students in China found that BD was a mediator for self esteem and depressive symptoms in obese boys and girls (Li 2007).

BD Among Children and Adolescents: BD is also a major concern because it is becoming more prevalent among youth. Children and teens are exhibiting BD, risky dieting behaviors and attitudes as well as eating disorders more frequently and at earlier ages. (Steinhausen 2002, Steiner 1998, Sands 1997).

BD and Gender: Although earlier studies focused primarily on females, recent literature has demonstrated significant rates of BD, dangerous behaviors to alter weight and shape, and eating pathology among males (Furnham 1998, Pingitore 1997). In a survey of 1325 adolescents in the Northeast, girls were only slightly more likely than boys to be engaging in bulimic behaviors (self-induced vomiting or laxatives) in an effort to lose weight (Field 1997). A recent review of body image in boys examined 17 articles that found BD to be a common concern that is associated with distress (Cohane 2001).

BD and Socio-cultural Factors: The descriptions of eating disorders as an affliction of the wealthy Caucasian female are further refuted as BD and eating pathology are documented among a wider variety of socioeconomic and cultural groups (Robinson et al, 1996, Field et al, 1997, Story et al 1995). In a study of 704 male students, Hispanic boys were more likely to engage in binge eating than Caucasian boys and African American girls were more likely to engage in self-induced vomiting or use laxatives than Caucasian girls (Field 1997).

A large study of 36,320 students in Minnesota found that Hispanic females were more likely to use diuretics and Asians reported increased rates of binge eating compared to Caucasian.

The rising rates of body image concerns and related negative outcomes among boys and girls emphasize the importance of designing and implementing culturally effective prevention programs. This is the first study to examine body ideals and BD among the multiethnic and multicultural adolescents of the Pacific.

CHAPTER 2: METHODS

Setting: Kauai is a rural outer island of Hawaii with a population of approximately 60,000. It is rich in a blend of different cultures and ethnicities, primarily Hawaiian (HWN), Filipino (FIL), Japanese (JAP), Caucasian (CAU), Chinese (CHN), Portuguese (POR), and Pacific Islanders. It is an island that depends on tourism and agriculture but has had a fluctuating economy due to natural disasters such as hurricanes and floods. The entire island falls under one public school district, and thus under one direct DOE superintendent with individual principals serving each school. There are 6 public schools on the island that serve 7th through 12th grade. There are also small private schools in each of the major areas of the island.

Procedures: Given previous research showing that eating disorders tend to have their onset in adolescence (Anzai 2002, Kreipe et al 2000), our target population consisted of community students in grades 7-12. After IRB approval of the project, the public school's DOE superintendent and the principals of 4 of the private schools on the island were approached and agreed to participate in the study. Consent and assent forms were distributed to all of the 7-12th graders in these schools, either in their homeroom or science/health class. Those who signed and returned them properly were given a 4 page survey which they took 5 minutes to fill out in class. The survey was anonymous and included one page of biographical information and 3 short screening tools, including the figure drawing screen. Once completed, the teachers collected the surveys and gave the participants a discount coupon from local merchants.

Measures:

1. Demographic data were obtained by asking each student their age, sex, school type (private or public), grade level, living situation, and socioeconomic status (modified Hollingshead, 1976).

2. Body Ideals and Body Dissatisfaction: The figure drawing screen is a commonly used and validated instrument used to assess body dissatisfaction. A series of nine progressively larger figures adapted from the Stunkard figures were presented (Stunkard 1983). The students were asked to choose the figure that most looks like them (perceived body) and then to choose the figure they would most like to look like (ideal body).

Analysis: Descriptive statistics were calculated for all variables. A difference of 2 or more units between perceived body and ideal body was considered positive for BD. Chi-squared statistics were calculated to assess the statistical significance of differences in BD based on ethnicity, sex, grade level and SES overall and by direction of BD (e.g., wanting to be thinner or wanting to be bigger). Logistic regression models used total body dissatisfaction BD(Total), BD in the direction of wanting to be smaller BD(sm), and BD in the direction of wanting to be larger BD(big) as the outcomes. Sex, ethnicity, school type, and parental education were the independent variables. Grade level, SES, and number of working parents were not found to be significantly associated with BD and thus not included in the models. For comparison purposes, the reference population was considered to be the Caucasian females, given previous research indicating increased rates of BD among females and most studies having a majority of Caucasian participants.

CHAPTER 3: RESULTS

Sample: Out of 2336 consents that were sent out, 57% (1330) were returned completed properly, with parent consent and student assent signed. Table 1 describes the characteristics of the student sample.

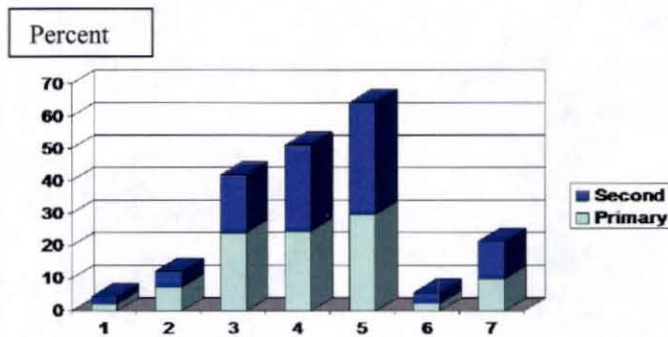
Table 1: Student Characteristics

CHARACTERISTICS	%
Sex: Male	44
Female	56
Grade 7	29
8	27
9	13
10	11
11	10
12	10
School: public	89
private	11
Live with: Mom only	19
Dad only	5
Both	67
Other	9
# working parents: 0	3.4
1	25
2	71.6
# parents w/ college: 0	24.9
1	32.4
2	42.5

The sample consisted of 44% males and 56% females, with 11% being from private and 89% being from public schools. One large high school was not able to participate due to unforeseen circumstances, which accounts for the skewed grade distribution. The majority of the students (67%) lived with both parents, 19% lived with mother, 5% with father and 9% with “other”. The majority had a 2 income family (72%) with 25% having one working parent and 3.4% being unemployed (similar to state data at that time). 42.5% of students stated that both parents had attended college, 32.5% had one parent who attended, and 25% had never attended college.

Figure 1 shows the distribution of socioeconomic status for both primary and secondary caregivers utilizing a modified Hollingshead scaling system.

Figure 1: Caregiver Socioeconomic Status (SES)



SES results showed a bell-shaped curve distribution slightly skewed toward the lower SES categories.

Table 2 describes the self-reported primary ethnicity of student participants.

ETHNICITY	FREQUENCY (%)
Filipino	320 (25.1%)
Caucasian	315 (24.7%)
Hawaiian	302 (23.7%)
Japanese	155 (12.2%)
Portuguese	42 (3.3%)
Chinese	29 (2.3%)
Other	113 (8.9%)

Table 2: Student Ethnicity

Ethnicity was similar to known demographics for the island of Kauai: FIL 25.1%, CAU 24.7%, HAW 23.7%, JAP 12.2%, POR 3.3%, CHN 2.2%, Other 8.9%.

Body Ideals:

Figure 2 depicts ideal body figure chosen on the figure rating scale by gender. The student was asked to indicate which of the nine figures they most wanted to look like (you want).

Figure 2. Body Ideal by Gender

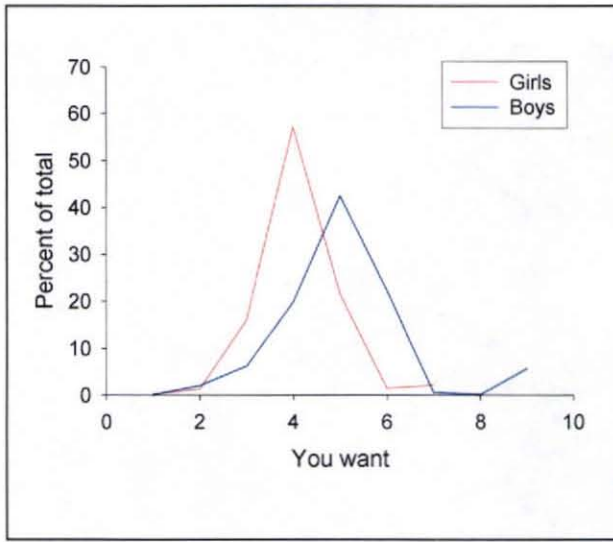


Table 3: Body Ideal by Gender

Ideal Body	Female Number (%)	Male Number (%)
1	2 (0.3)	12 (2.1)
2	90 (12.5)	36 (6.3)
3	279 (38.8)	114 (19.9)
4	221 (30.7)	244 (42.5)
5	85 (11.8)	128 (22.3)
6	24 (3.3)	4 (0.7)
7	5 (0.7)	0 (0.0)
8	2 (0.3)	1 (0.2)
9	12 (1.7)	33 (5.8)

The figure drawing screen showed that most females narrowly cluster around a preference for the 3rd body type (38.8%). 12.5% would prefer to be like the second figure and 0.3% desire the thinnest figure. The males have a slightly wider spread and chose slightly larger figures. The majority (42.5%) chose the fourth figure, followed by the fifth (22.3%) and third (19.9%). 2.1% of males desired to look like the thinnest figure.

Body Dissatisfaction:

Of the 1330 completed surveys, 19% of students were significantly dissatisfied with their bodies. Figures 3-5 depict BD by gender and BD by direction and gender.

Figure 3. Total BD Among All Students and by Gender

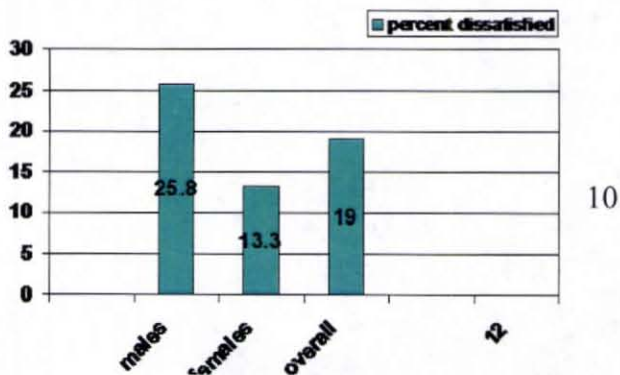


Figure 4. Percentage of BD in Boys

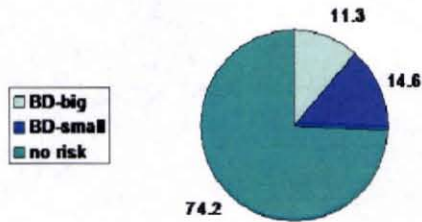
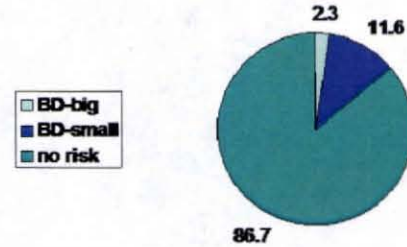


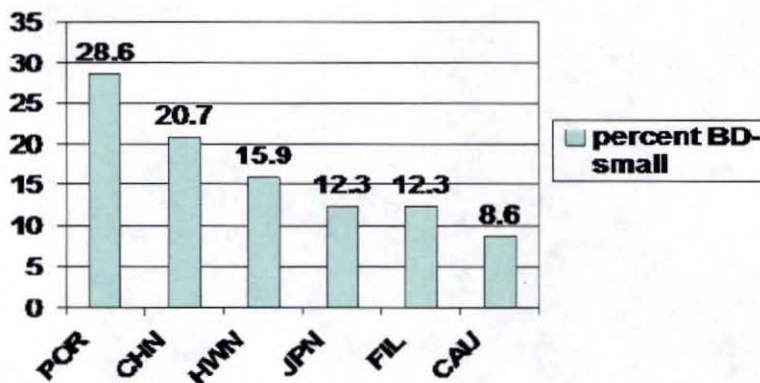
Figure 5. Percentage of BD in Girls



Males were at greater risk than females for total BD (25.8% vs. 13.3%; $p < 0.0001$) and for BD in the direction of wanting to be larger (BDbig) (11.3% vs. 2.3%; $p < 0.0001$). Boys and Girls were at similar risk for BD in the direction of wanting to be thinner (14.6% vs. 11.6%; $p = 0.11$).

Figure 6 depicts the differences in BD in the direction of wanting to be smaller (BDsm) by ethnicity.

Figure 6. BDsm by Ethnicity



Prevalence of BD in the direction of wanting to be thinner was statistically different among ethnic groups, with Caucasians having the lowest BD among the ethnic groups. There were no significant differences in BD based on grade level, type of school, or SES.

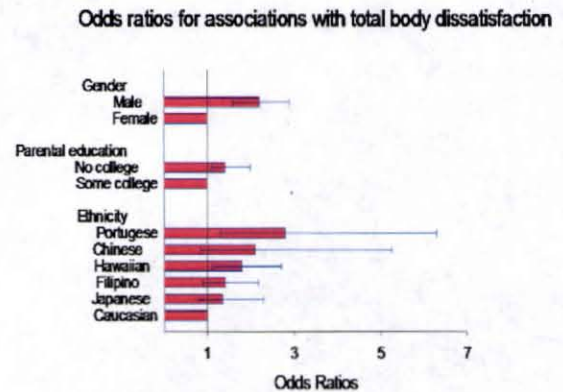
Logistic Regression Models:

Table 4 describes the odds ratios for total BD associated with student and family characteristics. Figure 7 depict the odds ratios for BDsm and BDbig associated with student and family characteristics.

Figure 7. Odds of BD by Gender and Ethnicity

GENDER	WANT TO BE	PREDICTORS	ODDS RATIO (95% CI)
Females	smaller	Hawaiian	2.7 (1.3-5.4)
		Chinese	5.7 (1.7-18.7)
	larger	Portugese	6.1 (1.3-29.2)
Males	smaller	Portugese	5.7 (1.9-17.2)
	larger	None	

Table 4. Odds of Total BD



Predictors for BD(total) included being male (OR 2.2/CI 1.6-2.9), being HWN or POR (OR 1.8/CI 1.1-2.7; OR 2.8/CI 1.3-6.1), and parental education (OR 0.7/CI 0.5-0.9).

Female BD(Total) was predicted by being HWN, Chinese, or POR (OR 1.9/CI 1.1-3.5; OR 4.3/CI 1.4-13.5; OR 3.6/CI 1.3-10.1), and level of parental education (OR 0.6/CI 0.4-0.9).

None of the variables predicted BD(Total) for males. BD(big) among all students was predicted by being male (OR 5.0/CI 2.9-8.4) and for females by being POR (6.1/1.3-29.2).

BD(sm) was predicted by being HWN or Chinese for females (OR 2.7/CI 1.3-5.4; OR 5.7/CI 1.7-18.7) and by being POR for males (OR 5.7/ CI 1.9-17.2).

CHAPTER 4: DISCUSSION AND IMPLICATIONS

This study supports findings that BD is a growing concern among children and adolescents. In this sample there were some trends of BD increasing with grade level; however, these were not significant. These results are similar to a cross-sectional study finding that BD predicted dieting behaviors in 11, 13, and 15 year old students (N=4952) and that in multiple regression analysis the “overall effect of...age was small (Borresen 2003). This suggests that by the time students have reached seventh grade, these issues are already a common concern. These results are similar to findings in the US and Canada that have shown body image concerns in childhood and early adolescence (Drewnowski 1987, Sands 1997, McVey 2003). Primary prevention programs would need to begin in elementary school in order to truly prevent the onset of BD. This also suggests that by middle school a significant percentage of students have body image concerns that may be amenable to targeted secondary prevention approaches.

These results also show that BD is a significant concern among boys and replicate the bidirectional nature of BD in males seen in at least two previous studies. These results were similar to results seen in a large Norwegian study that found 20% of male students age 11-15 were dissatisfied with their bodies (Borresen 2003). A study of 226 freshman students found that males had similar rates of desiring to lose weight (40%) and desiring to gain weight (45%) (Drewnoski 1987). Similarly, male adolescents have been shown to be “as likely to want to be heavier as lighter” (Furnham 2002). Similar to our findings, both studies also found that only a very small percentage of females desired to be larger or gain weight. There is little known about the associated risks and naturalistic outcomes of BD in

males. Different pathways may lead to unhealthy eating attitudes and behaviors for boys compared to girls and further research would help find key factors that may be amenable to interventions. Little is known about the future consequences of BD in males as they complete adolescence and move into adulthood. Externalizing behaviors more frequently seen in males, such as substance abuse, aggression or conduct disturbance, might be considered as potential outcomes for future prospective studies.

The results also support findings that BD and eating disorder risk are no longer only the concern of the Caucasian affluent female. In this study the CAU group had the lowest risk of BD compared to the multiple other ethnic groups, similar to Robinson's study in 1997 that found Hispanics and Asians reporting more BD than CAU. In Hawaii, this is likely, at least in part, to be due to the fact that there is no true "majority" and much of the population is also of mixed ethnicity. Once key factors, such as parental education and SES, were controlled for, the HAW, POR, and CHI remained at significantly higher risk of BD. There are likely many social and cultural (and possibly genetic) factors that relate to these findings. Little is known about BD and eating disorders in these groups in the US and exploration with qualitative as well as quantitative research is warranted. Many studies have also found higher risk in different cultural and ethnic groups, for example, Hispanics and African Americans may be more at risk for body dissatisfaction, chronic dieting, and bulimic behaviors (Robinson et al, 1996, Field et al, 1997, Story et al 1995). International studies also give examples of pervasive BD in Japan, China, Norway, Canada, Britain, Australia, and others (Makino 2006, Li 2007, Borresen 2003, Furnham 2002, Sands 1997) This emphasizes the role of media and societal influence on development of body esteem.

As our world is increasingly connected, so too will we share and be impacted by images and ideals regarding body shape, size and beauty. It will take more than individual and family interventions to promote healthy body image, changes in policy and media also need to be addressed.

CHAPTER 5: CONCLUSION

This is the first study to examine BD among the adolescents of the Pacific region. These results highlight the pervasive nature of body image problems affecting youth, boys as well as girls, from a variety of cultural and socioeconomic groups. Studies to examine risk and protective factors among different groups may help tailor prevention strategies that should be targeting both sexes. This study also highlighted the bidirectional nature of BD among males. Further research on BD in males to understand the etiologic pathways, potential consequences, and modifiable risk factors is warranted. It is clear that fostering healthy body esteem needs to begin early for boys and girls and be culturally effective to reach our increasingly multicultural population.

REFERENCES

- Agras WS. The consequences and costs of the eating disorders. *Psychiatr Clin North Am* 2001; 24:371-9.
- Agras et al. Childhood risk factors for thin body preoccupation and social pressure to be thin. *J Am Acad Child Adolesc Psychiatry*. 2007 Feb;46(2):171-8.
- Anzai et al, Inpatient and Partial Hospitalization Treatment for Adolescent Eating Disorders. *Child Adolesc Psychiatric Clin N Am* 2002; 11:279-309
- Becker et al. Television, disordered eating, and young women in Fiji: negotiating body image and identity during rapid social change. *Cult Med Psychiatry* 2004; 28(4): 533-59.
- Borresen R, Rosenvinge JH. Body dissatisfaction and dieting in 4,952 Norwegian children aged 11-15 years: less evidence for gender and age differences. *Eat Weight Disord* 2003;8(3):238-41.
- Cohane GH, Pope HG. Body image in boys: a review of the literature. *Int J Eat Disord* 2001;29:373-9.
- Douthitt VL. Psychological determinants of adolescent exercise adherence. *Adolescence* 1994;29:711-22.
- Drewnowski A, Yee DK. Men and body image: are males satisfied with their body weight? *Psychosom Med* 1987;49:626-34.
- Eddy et al. Eating pathology in East African women: the role of media exposure and globalization. *J Nerv Ment Dis*. 2207; 195(3):196-202.
- Field et al. Relation of peer and media influences to the development of purging behaviors among preadolescent and adolescent girls. *Arch Pediatr Adolesc Med*. 1999; 153(11): 1184-9.
- Field et al. Racial/ethnic and gender differences in concern with weight and in bulimic behaviors among adolescents. *Obes Res*. 1997; 5(5): 447-54.
- Furnham et al. Eating disturbance, self-esteem, reasons for exercising and body weight dissatisfaction in adolescent males. *Eur Eating Disord Rev* 1998;6:58-72.
- Furnham et al. Body image dissatisfaction: gender differences in eating attitudes, self-esteem, and reasons for exercise. *J Psychol* 2002;136(6):581-96.
- Gardner et al. Predictors of eating disorder scores in children ages 6 through 14: a longitudinal study. *J Psychosom Res* 2000; 49(3):199-205.
- Greenberg et al. Cultural correlates of eating attitudes: a comparison between native-born and immigrant university students in Israel. *Int J Eat Disord*. 2007;40(1): 51-58.
- Hawkins et al. The impact of exposure to the thin-ideal media image on women. *Eat Disord* 2004; (12(1): 35-50.

- Johnson et al. Dietary restraint, body dissatisfaction, and psychological distress: a prospective analysis. *J Abnorm Psychol* 2005;114:119-125.
- Kreipe et al, Eating Disorders in Adolescents and Young Adults. *Adolescent Medicine* 2000; 84(4): 1027-1049.
- Kreipe et al, *Pediatrics in Review* 1999;20:410-421.
- Li et al. Report on childhood obesity in China (5) body weight, body dissatisfaction, and depression symptoms of Chinese children aged 9-10 years. *Biomed Environ Sci* 2007; 20(1):11-18.
- Makino et al. Factors associated with abnormal eating attitudes among female college students in Japan. *Arch Women's Ment Health* 2006;9(4):203-8.
- McVey et al. Risk and protective factors associated with disordered eating during early adolescence. *J Early Adol* 2002;22(1):75-95.
- Neumark-Sztainer et al. Associations between body satisfaction and physical activity in adolescents: implications for programs aimed at preventing a broad spectrum of weight-related disorders. *Eat Disord Treat Prev* 2004;12:125-37.
- Neumark-Sztainer et al. Does body satisfaction matter? Five-year longitudinal associations between body satisfaction and health behaviors in adolescent females and males. *J Adolesc Health* 2006; 39:244-51.
- Paxton et al. Prospective predictors of body dissatisfaction in adolescent girls and boys: A five-year longitudinal study. *Devlop Psychol.* 2006;42(5): 888-899.
- Paxton et al. Body dissatisfaction prospectively predicts depressive mood and low self-esteem in adolescent girls and boys. *J Clin Child Adolesc Psychol.* 2006; 35(4): 539-49.
- Pingitore et al. Gender differences in body dissatisfaction. *Obes Res* 1997; 5:402-7.
- Presnell et al. Risk factors for body dissatisfaction in adolescent boys and girls: a prospective study. *Int J Eat Disord* 2004; 36(4): 389-401.
- Robinson et al. Ethnicity and body dissatisfaction: are Hispanics and Asian girls at increased risk for eating disorders? *J Adolesc Health* 1996; 19(6): 384-93.
- Rodriguez-Cano et al. Body dissatisfaction as a predictor of self-reported suicide attempts in adolescents: a Spanish community prospective study. *J Adolesc Health* 2006; 38(6): 684-8.
- Rosenblum et al, Evidence-based Treatment of Eating Disorders. *Current Opinion in Pediatrics* 2002; 14:379-383.
- Sands et al. Disordered eating patterns, body image, self-esteem, and physical activity in preadolescent school children. *Intern J Eating Disord* 1997; 21(2):159-66.
- Steiner et al, Anorexia Nervosa and Bulimia Nervosa in Children and Adolescents: A Review of the Past 10 Years. *J Am Child Adolesc Psychiatry* 1998; 37(4):352-359.

Steinhausen et al, The Outcome of Anorexia Nervosa in the 20th Century. *Am J Psychiatry* 2002; 159:1284-1293.

Stice et al. Body image and eating disturbances predict onset of depression among female adolescents: a longitudinal study. *J Abnorm Psychol* 2000; 109:438-44.

Stice E. Risk and maintenance factors for eating pathology: a meta-analytic review. *Psychol Bull* 2002; 128:825-48.

Stice et al, *Eating Disorders: Innovative Directions in Research and Practice* 2001; 51-73.

Story et al. Ethnic/racial and socioeconomic differences in dieting behaviors and body image perceptions in adolescents. *Int J Eat Disord.* 1995; 18(2): 173-9.

Womble et al. Psychosocial variables associated with binge eating in obese males and females. *Int J Eat Disord* 2001; 30(2):217-221.