

# the GAHPERD JOURNAL

Georgia Association for Health, Physical  
Education, Recreation and Dance  
Volume 45 Number 1 Winter 2012

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## *Past Presidents Meet at Annual Convention*



(l-r) Kim Thompson, David Worrall, Dr. Beverly Mitchell, Stephanye Peek, Cecil Marett, Linda Galloway, SDAHPERD President Mike Ballard, Dr. Jacque Harbison, Dr. Dave Harris, Lea Barrett

# GAHPERD Membership Form

Please print clearly and provide all information requested. This will help us serve you better. Make check payable to GAHPERD and send this form with payment to: Kim Thompson, GAHPERD Executive Director, 9360 Highway 166, Winston, GA 30187. You may also join or renew and pay online at [www.gahperd.org](http://www.gahperd.org).

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# GAHPERD

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Recreation and Dance  
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Winston, GA 30187

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## ***GAHPERD Vision Statement***

The Georgia Association for Health, Physical Education, Recreation and Dance envisions a society in which an active, healthy lifestyle is valued and practiced by all Georgians. GAHPERD takes a leadership role in promoting the professions it represents by broadening public perceptions and values, through dynamic services, creative products, innovative programs and on-going research. As a leader in the state, GAHPERD seeks to unite with professional and community organizations to achieve the vision of a healthy Georgia.

## ***GAHPERD Mission Statement***

GAHPERD is a nonprofit organization for professionals and students in related fields of health, physical education, recreation and dance. GAHPERD is dedicated to improving the quality of life for all Georgians by supporting and promoting effective educational practices, quality curriculum, instruction and assessment in the areas of health, physical education, recreation, dance and related fields.

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## The GAHPERD Journal

The GAHPERD Journal is published three times per year (Winter, Spring/Summer, and Fall) by the Georgia Association for Health, Physical Education, Recreation and Dance, a non-profit organization. Membership in the Association entitles one to receive all journals and newsletters for that year. Subscriptions of \$30 per year are available to libraries and institutions. Single issues are \$12 each. Requests for missed issues will be honored for eight weeks following the publication date. The GAHPERD Journal is listed in the Physical Education Index.

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# PRESIDENT'S CORNER

**Jeff Townsend**  
*GAHPERD President*

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Dear Members -

Let me start by saying thank you for the opportunity to have served you over the last year as your President Elect. I have been afforded the opportunity to learn about our organization from the other side, through various workshops and leadership trainings events that I have attended. I will use what I have gained to help me continue to be a great leader for you now as your President.

On the heels of a great convention, there are a few people who need to be thanked for their hard work. The convention committee did a wonderful job this year. Without the work of Amy Howton, Cerie Godfrey, Brenda Segall, and Brian Devore, bringing together the professional's who presented; this would not have been successful. I want to extend an extra thanks to Brian Devore for his work in setting up the sessions and interviews for the young professionals.

The energy at the convention this year was extremely high and that was due to you all of wanting to learn and grow to become better teachers and educators in the fields of Health, Physical Education, Recreation, and Dance.

As we look into the future my goals for the next year are to get more schools involved in our Jump Rope and Hoops for Heart programs. These programs are the life of our organization. With the money they send back to us each year and the equipment that schools receive, these two programs are invaluable. We must continue to support them in our schools. If you currently host a Hoops or Jump Rope for Heart event thank you, and if you do not I strongly encourage you to look into doing so.

My second goal for our organization is to become more involved in the Let's Move in Schools program. This initiative was started in order to get the whole school moving at one time. This can be done by doing exercises during morning announcements, or a culminating event at the end of a unit where the entire school is moving at the same time. Georgia and the Southern District have led the way in the last year with the number of schools involved, but I believe we can do better.

This upcoming year there will be many great things in store for us, I hope you have an opportunity to be part of the Southern District Convention in Orlando in February, as well as the National Convention in Boston in April.

This is going to be a great year and I am excited to see what our organization has to offer this year come to life.

*Jeff Townsend*

GAHPERD President

## **GAHPERD PUBLICATIONS GOING GREEN**

At the August 2010 GAHPERD Executive Board Meeting a motion was passed from the Executive Committee that effective January 1, 2011 all Journals and newsletters go online. Anyone who wishes to receive a hard copy of either publication should specifically request a hard copy in advance from Executive Director, Kim Thompson. Kim can be contacted at [coacht9360@bellsouth.net](mailto:coacht9360@bellsouth.net)

Only a minimum number of hard copies will be printed in an attempt to cut GAHPERD's printing and postage costs.



Emily Adams presents a check from the American Heart Association after another outstanding year.

# Georgia Association for Health, Physical Education, Recreation, & Dance

## *Calendar of Events*

### IMPORTANT DATES

<i>February 8-11, 2012</i>	SDAAHPERD Convention, Orlando, FL
<i>March 13-17, 2012</i>	AAHPERD Convention, Boston, MA
<i>November 10-13, 2012</i>	<b>GAHPERD</b> Convention, Desoto Hilton Savannah
<i>April 23-27, 2013</i>	AAHPERD/SDAAHPERD, Charlotte, NC
<i>October 26-29, 2013</i>	<b>GAHPERD</b> Convention, Marietta Hilton
<i>March 18-22, 2014</i>	AAHPERD Convention, St. Louis, MO
<i>November 1-4, 2014</i>	<b>GAHPERD</b> Convention, Savannah Hilton
<i>March 17-21, 2015</i>	AAHPERD Convention, Seattle, WA
<i>October 23-26, 2015</i>	<b>GAHPERD</b> Convention, Marietta Hilton

# CONVENTION 2011



Stephanye Peek Acknowledgement Award



Jennifer Powell Acknowledgement Award



Therese McGuire Acknowledgement Award



Jacque Harbison Acknowledgement Award



Jeff Townsend accepts the gavel as new president from David Worrall



The new GAHPERD Board takes the oath of office.



JRFH/HFH Breakfast



Donna Ross, Health Education Professional of the Year



Dr. Hilda Wilkins, Advocate of the Year



Gabe Romero  
SW Middle School PE Teacher of the Year



Natalie Rogers  
Nutritionist/Fitness Expert



Dewey Hooper  
Savannah Christian Prep



Janet Gnann  
May Howard Elementary School

# The Price is Right Grand Finale





Dr. Shannon Williams  
College/University Health Education Specialist Awards



Karen Clevenger  
College/University Dance Educator of the Year



Blackwell Elementary School  
Excellence in PE



Stephanie Lawson  
Elementary PE Teacher of the Year



Dr. Brent Heidorn  
Robert W. Moore Professional Recognition Award



Dr. Tom Donovan  
President's Citation

# College Competition Winners



1st Place ALL STARS Competition, University of West Georgia



2nd Place ALL STARS Competition, Albany State University



First Place  
Extreme  
Challenge  
"Team  
KSU  
Girls"



3rd Place ALL STARS Competition, Georgia Southern University



# BEEP KICKBALL ASSOCIATION

FOR IMMEDIATE RELEASE  
September 23, 2011

Contact: Judy Byrd 770.317.2035  
JudyByrd@gmail.com

## **Beep Kickball: A New Sport for Kids with Vision Loss**

Imagine a baseball diamond and 12 kids, six per team. A kickball beeps and the bases buzz. There is neither pitcher or catcher, or throwing the ball. The player kicks the ball and runs to the base that buzzes, tagging the base before fielders locate and pick up the ball. If the kicker gets there first, he scores a run. If the fielders pick up the ball first, the player is out. Three outs, six innings, game over!

Judy Byrd, an Atlanta area volunteer who helped start the Atlanta Beep Baseball team in 2010, created Beep Kickball and serves as team manager. "Every Saturday while playing beep baseball, I saw teens and adults, both sighted and unsighted, having fun playing sports," explained Byrd. "They were part of a team, working together to 'level the playing field' between those with sight and those without. I wondered how younger kids could experience the same joy. Then it came to me, same sport, different ball: Beep Kickball!"

Beep Kickball is played as an after school activity at the Georgia Academy for the Blind, the South Carolina School for the Deaf and Blind, and at several summer camps in the Southeast. During summer 2011, kids played Beep Kickball throughout the U.S. at several Camp Abilities, renowned sports camps for visually impaired children. Kathy Zwald of Camp Abilities in Tucson explains how Beep Kickball benefits children. "It's fun," says Zwald. "It develops agility and motor skills; it encourages kids to feel good about their movement; and, it promotes exercise, builds confidence, and creates avenues to build teamwork and social networks!"

Beep Kickball is modeled after Beep Baseball, a popular sport for decades among people with blindness. Beep Baseball culminates in a World Series each August and will take place in Georgia in 2013. Not only are highly competitive Beep Baseball teams found in the United States, but all over the world, including Taiwan, Europe and Australia.

Byrd said, "I hope that Beep Kickball will reach the same popularity and status, becoming available to every child with vision loss to play recreationally and competitively through after school activities, summer camps and other community sports. I encourage parents of children with blindness or visual impairment to speak with school and community PE teachers about starting Beep Kickball groups," she said.

To learn more, contact Judy Byrd at [JudyByrd@gmail.com](mailto:JudyByrd@gmail.com) or 770-317-2035 or visit the website [www.BeepKickBall.com](http://www.BeepKickBall.com).

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# REFEREED ARTICLE

## Comparing Body Image Dissatisfaction Among Middle-Aged Women: A Life-Long Experience

By Helen W. Bland, Amy Jo Riggs and Bridget F. Melton

Georgia Southern University

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### Abstract

**Background:** Although Body Image Dissatisfaction (BID) can occur throughout the lifespan, the majority of the previous research has focused on younger or older females. Furthermore, few studies have investigated factors that influence BID such as interpersonal distrust, social comparison, media influence, and maturity fears. **Purpose:** The purpose of this study was to compare BID among middle-aged women by BID subscales (interpersonal distrust, social comparison, media influence, and maturity fears). **Method:** A quantitative, cross-sectional, descriptive study was employed; 341 women were recruited to participate in the study. **Results:** Investigators found that 39.4% of participants were unhappy with current weight and 82.4% were afraid of becoming fat. Age among middle-aged women was not a significant factor in the subscales. BID remained constant across age groupings ( $P>0.05$ ) in middle-aged women, indicating BID issues affect all ages equally. Overweight/obese women suffer BID at significantly higher rates than normal/underweight women ( $P<0.05$ ). **Discussion:** This study found that higher educational levels seemed to protect one against interpersonal distrust and social comparison. Similar to past research, age and ethnic background were not significant factors in body image subscales. **Translation to Health Education Practice:** Middle-aged women suffer from BID at the same rate as younger women. Education can serve as a protective factor against BID. Health educators should implement self-assessments on eating and lifestyle behaviors when working with women that have BID and tailor programs to meet individual needs.

### Background

Body Image Dissatisfaction (BID) among women in the United States is common (Dittmar, Halliwell, & Stirling 2009). BID has been defined as the discrepancies between women's actual bodily self (how their body is) and the ideal bodily self (how they would like their body to be) which leads to negative affect (Dittmar *et al.*, 2009). Nearly three-fourths of normal-weight women have disordered eating behaviors (UNC, 2008). When women cannot obtain their idealized body shape; body dissatisfaction, low self-esteem, and possibly eating disorders can occur (Groesz, Levine, & Murnen 2002).

To date, much BID research has focused on younger women and children. A previous study by Kraye, Ingledew,

and Iphofen found that adolescents are aware of societal standards and pressures that impact their body image (Edwards-George and Franko, 2010). Other studies have investigated the influence of culture on body image in children and adolescences (Kraye, Ingledew, & Iphofen, 2008; Kelly, Bulik, & Mazzeo, 2011). Even young-adult women have been the focus of much research, including studies on intervention programs (Wood-Barcalow, Tylka, Augustus-Horvath, 2010).

However, new data suggest that body image issues are not just prevalent in young women and children but can occur throughout a woman's lifespan (Webster and Tiggemann, 2003; Marcus, Bromberger, Wei, Brown, & Kravitz, 2007; Mangweth-Matzek, Rupp, Hausmann, *et al.*, 2006). Bedford and Johnson (2006) compared BID and weight control practices among younger (10-23 years) and older (65-74 years) women; no differences in BID prevalence between younger women and older women were found. Nevertheless, Algars *et al.* suggest that body satisfaction may fluctuate during different phases of the adult life (2009).

Body image is defined as a multidimensional attitude toward one's body that includes perceptual, affective, and cognitive components (Peat, Peyerl, Muehlenkamp, 2008). Previous research supports that four consistent factors which include interpersonal distrust, social comparison, media influence, and maturity fears (process of aging) can affect BID (Forman, Davis, 2005; Saucier, 2004; Lewis, Cachelin, 2001; Myers, Crowther, 2009; Dittmar, Howard, 2004; McDermott, Sarvela, 1997).

Although interpersonal distrust (feelings of ineffectiveness) influences BID, current research suggests there is no significant difference between age groups (Groesz *et al.*, 2002; Forman *et al.*, 2005; Saucier, 2004). Several studies have investigated social comparison and body distortion and found that comparing oneself to another on the basis of appearance may lead to significant body dissatisfaction (UNC, 2008; Dittmar *et al.*, 2004; McDermott *et al.*, 1997). Media influence was the most significant correlate of BID (Groesz *et al.*, 2002; Peat *et al.*, 2008; Forman *et al.*, 2005). A previous study reported that media were more likely to increase body dissatisfaction in younger women than older women (Webster *et al.*, 2003). Maturity factors, such as signs of aging, can also influence BID (Forman *et al.*, 2005; Saucier, 2004). As a woman ages, one can experience anxiety and maturity fears. Unfortunately, the signs of aging (wrinkles,

graying hair, and weathered skin) are viewed as distinguished in men, but interpreted as negative characteristics in women (Forman *et al.*, 2005). Understanding the relative influence of each of these four factors upon an individual's experience of BID in terms of both importance and pressure will give a clearer picture of why BID is such a common phenomenon. Previous studies have found BID among women across the lifespan; however, relative importance and significance of contributing factors have not been delineated.

### **Purpose**

The purpose of this study was to compare BID among middle-aged women by BID subscales (interpersonal distrust, social comparison, media influence, and maturity fears). Additionally, this study sought to rank these BID subscales according to importance by demographics. Tracking relative importance (ranking) and differences of BID by subscales and demographics may help guide professionals that work with women challenged by BID issues to specify programs that meet individual needs.

### **Methods**

Research methodology employed in this study was a quantitative, cross-sectional, descriptive study. Descriptive studies are utilized to gain new information and help document the existence of a phenomenon in a group of people (Dittmar *et al.*, 2004). The instrument utilized in this study recorded BID by factors that contribute to this dissatisfaction.

#### *Participants and Procedures*

Sampling procedures included randomized blanket sampling methodology at a midsize university in the southeastern region of the U.S. This university employs approximately 1300 female staff and faculty members, of which all were invited to participate in this survey. Recruitment of participants was solicited through the university's email accounts. Eligibility requirements included being female and having access to an active email account. Male employees and employees without email accounts were excluded from the study. BID is not a construct that only affects women, yet it impacts women at a higher rate than males and changes that women experience due to menopause are unique. Known email accounts of women at a university afforded access to a variety of women with diverse demographics.

No names or any other identification was collected. The invitation email was sent out by authors of this study. Upon opening the email, participants were directed to a hyperlink to access the instrument on Survey Monkey software. Completed surveys were sent via Survey Monkey to a central data gathering place where all electronic identifying markers were removed prior to forwarding the completed instruments to the researchers to aggregate and analyze. No incentives were offered for participation.

Data collection was open for four weeks after the initial invitation email was sent. A reminder email was sent two weeks after the initial email to all participants, since it was

impossible to determine who had returned the survey. The university's Human Subjects Institutional Review Board approved the study. Participants read the informed consent and gave passive consent by completing the survey. Of the approximate 1300 female employees of the university, 928 have email accounts. Of this number, 341 completed all portions of the instrument. Percentage of participation is difficult to determine because researchers do not know who actually received and opened the email. Due to the fact that the authors could not determine percentage of participation, a post-hoc power analysis was calculated which yielded the power as  $(1-\beta) = 0.9801$ . Power of 0.80 or higher is considered acceptable in research. For age, three age grouping categories were created: 21-35 years, 36-50 years, and 51+ years of age, modeled from past studies (Webster *et al.*, 2003; Marcus *et al.*, 2007; Mangweth-Matzek *et al.*, 2006). Furthermore, age groupings were based upon distinct nutritional metabolic changes, with metabolism changing for women during the periods of early adulthood (after the age of 20), premenopausal (<50 years old) and postmenopausal (>50 years old) (Ley, CJ, Lees, Stevenson, 1992; Poehlman, Toth, Gardner, 1995).

#### *Instruments*

Body Image Dissatisfaction and Women Questionnaire (BID-WQ) consisted of 31 questions including 22 questions (15 direct and 7 modified) acquired from established questionnaires (McDermott *et al.*, 1997; Cooper, Taylor, Cooper, Fairburn, 1986; Mciza, Goedecke, Steyn, Charlton, Puoane, Meltzer, *et al.*, 2005) and nine original items. Direct and modified questions were chosen for this study because of their established validity and previous use among other researchers (McDermott *et al.*, 1997; Hehenkamp, Volkers, Bartholomeus, de Blok, Birnie, Reekers, *et al.*, 2007). Behavioral questions had select response items of "always, often, sometimes, rarely and never" and "yes or no." Original questions were developed to fully address and augment the BID subscales under investigation. Five additional questions covering demographics and anthropometrics measures included: educational level, race, age, weight and height. The validity of this instrument was established by using questions from previously validated instruments. In addition, a factor analysis with extraction method: Principal Component Analysis was conducted after question modification and additions were complete. A loading factor of 0.40 is acceptable for a variable to load on a unique subscale. Data supported that questions did load on four distinct subscales (>0.40).

Internal consistency reliability scores were calculated after data collection and reported overall score ( $\alpha = 0.927$ ) and subscales scores (Interpersonal Distrust  $\alpha = 0.885$ ; Body Distortion  $\alpha = 0.836$ ; Social Insecurity  $\alpha = 0.882$ ; Media Influence  $\alpha = 0.704$ ; and Maturity Fears  $\alpha = 0.312$ ). Overall reliability score was derived by using only items from the subscales and was calculated to in an effort to measure the consistency of the idea of Body Image Dissatisfaction. Any Cronbach Alpha score of 0.60 or higher is considered

acceptable (McDermott *et al.*, 1997), which was exceeded by the instrument overall and all subscales except for maturity fears. Maturity fears subscale was low due to the variation in select response items. Behavioral questions for the maturity fears had some response items as “always, often, sometimes, rarely, and never”, as well as “yes or no”. To increase reliability in the future, select response items for maturity fears subscale questions should be consistent.

#### Statistical Analysis

Variations in BID subscales among this female population were reported by means and standard deviations. Statistical tests included descriptive (frequencies, means) and inferential statistics (ANOVAs). Demographics (race, educational level, age groupings, and BMI) served as independent variables while the four subscales of body image dissatisfaction were dependent variables. ANOVAs determined significant differences ( $P < 0.05$ ) between BID subscale and demographics. SPSS was utilized to calculate data (version 18.0).

### Results

#### Participants

Participants of this study were well-educated, with 75.9% ( $N=258$ ) reporting that they attended a 4-year college or graduate school. The majority of the respondents reported being Caucasian (85.3%,  $N=290$ ) followed by African American (11.5%,  $N=39$ ). The largest age group

was represented by the 36-50 years old (41.8%,  $N=141$ ) followed by the 51-65 year olds, and the 21-35 year olds. No participants were under 21 or over 65 years old. BMI mean for the population was 27.49 kg/m<sup>2</sup>, indicating an overweight population. BMI was calculated on self-reported height and weight. BMI categories found 41.4% of participants to be normal ( $N=140$ ), followed by obese (28.4%,  $N= 97$ ), overweight (27.0%,  $N=92$ ) and underweight (2.3%,  $N=8$ ).

According to self-reported anthropometric data, 55.4% were overweight or obese; while 63.8% reported thinking they are overweight or obese. The vast majority reported trying to lose weight previously (92.2%) with 67.6% currently trying to lose weight. Over three quarters of the respondents (77.4%) think they have gained or will gain weight as they age, while 57.7% report restricting their diet as they get older. Only 1.5% ( $N=5$ ) reported being medically diagnosed with an eating disorder.

Participants’ responses to behavioral questions gave a description of the sample (Table 2). An overall snapshot revealed a female population currently unhappy with their weight or in fear of the future. Nearly half (47.7%,  $N=160$ ) reported crying because of their body shape. The vast majority of the participants reported that they “always, often or sometimes” fear getting fatter (82.3%,  $N=280$ ) while 84.4% ( $N=287$ ) are afraid of gaining weight as they age. This fear seems to be portrayed in action. Almost half of the participants (45.0%,  $N=152$ ) avoid looking at themselves

**Table 1. Descriptive statistics of demographic characteristics of BID and older women (N=341).**

Variable	N	(%)	Mean	Std.Dev.
Educational Level (n=340)				
High School	32	9.4	Age (yrs)	43.52
2 – year College	50	14.7		10.9
4 – year College	72	21.2		
Graduate School	186	54.7	Weight (lbs)	165.95
Race (n=340)				
African American	39	11.5	Height (in)	65.02
Asian American	5	1.5		2.7
Hispanic	6	1.8		
Caucasian	290	85.3	BMI	27.49
BMI (n=337) <sup>a</sup>				
Underweight	8	2.3		
Normal	140	41.1		
Overweight	92	27.0		
Obese	97	28.4		
Age Groupings (n=337)				
0 – 20 yrs	0	0.0		
21-35 yrs	93	27.6		
36-50 yrs	141	41.8		
51-65 yrs	103	30.2		

<sup>a</sup>BMI: underweight < 18.5; normal 18.5 to 24.9; overweight 25.0 to 29.9; obese > 30.0

in a mirror when naked, 67.0% ( $N=227$ ) report that seeing their reflection makes them feel badly about their shape, and 81.9% ( $N=277$ ) avoid wearing certain clothes because of their body shape.

Rank order of the top influencing subscales of body image by race, educational level, age groupings and BMI categories were determined (Table 3). Caucasians were found to be in

the top one or two of every BID subscale, while Hispanic and African Americans were impacted less by social comparison and maturity fears. African Americans were most impacted by media influence. For educational levels, those with higher education were less likely to have their body image impacted by interpersonal distrust, social comparison, media influence and maturity fears.

**Table 2. Descriptive Statistics for select BID and Older Women Questions as Reported by Frequency and Percentages ( $N=341$ ).**

	Always	Often	Sometimes	Rarely	Never
Question	<i>N</i> (%)				
Q3. Do you worry about your weight?	74 (21.7)	100 (29.3)	124 (36.4)	34 (10.5)	7 ( 2.1)
Q7. Have you ever been so worried about your weight that you wanted to diet?	44 (13.0)	99 (29.2)	124 (36.6)	49 (14.4)	23 ( 6.7)
Q8. Have you been afraid of becoming fat/fatter?	78 (22.9)	102 (30.0)	100 (29.4)	48 (14.1)	12 (3.5)
Q9. Have you ever felt that your thighs, hips or bottom are too large	64 (18.8)	54 (15.8)	99 (29.0)	71 (20.8)	53 (15.5)
Q10. Has feeling full after eating made you feel fat?	26 (7.6)	77 (22.6)	127 (37.2)	80 (23.5)	31 (9.1)
Q11. Have you ever felt so poorly about your body Shape that you have cried?	2 ( 0.6)	20 ( 6.0)	58 (17.3)	80 (23.8)	176 (52.4)
Q12. Have you ever avoided exercising because your flesh may wobble?	3 (0.9)	10 ( 3.0)	41 (12.2)	46 (13.7)	236 (70.2)
Q13. Have you ever felt more self-conscious about your shape when around thin women?	47 (13.9)	64 (19.0)	104 (30.9)	68 (20.2)	54(16.0)
Q14. Have you ever noticed the shape of other women and felt yours compared unfavorably?	24 (7.1)	91 (27.0)	135 (40.1)	70 (20.8)	17 (5.0)
Q15. Has thinking about your shape interfered with your ability to concentrate?	0 (0.0)	15 ( 4.4)	67 (19.8)	101(29.8)	156 (45.7)
Q16. Do you/ have you avoided looking at yourself in a mirror when naked?	7 (2.1)	52 (15.4)	93 (27.5)	78 (23.1)	108 (31.7)
Q17. Have you ever avoided MD appts because you don't want to get on a scale?	2 (0.6)	18 5.4)	15 ( 4.5)	34 (10.1)	226 (78.0)
Q18. Have you ever avoided wearing certain clothes because of your body shape?	39 (11.5)	117 (34.6)	121 (35.8)	41 (12.1)	20 ( 0.9)
Q19. Have you ever avoided social occasions because you felt badly about your shape?	2 ( 0.6)	20 (5.9)	55 (16.3)	67 (19.6)	194 (56.9)
Q20. Have you ever felt ashamed of your body?	11 (3.2)	52 (15.3)	116 (34.2)	86 (25.4)	74 (21.8)
Q21. Has seeing your reflection made you feel bad about your shape?	22 ( 6.5)	67 (19.8)	138 (40.7)	87 (25.7)	25 ( 7.4)
Q22. Have you ever avoided situations where people could see your body?	25 (7.4)	84 ( 24.9)	87 (25.7)	75 (22.2)	67 (19.8)
Q23. Have you ever vomited in order to feel thinner?	0 (0.0)	0 (0.0)	10 (2.9)	12 (3.5)	317 (93.5)
Q24. Have you ever taken laxatives, diuretics, or diet pills to feel thinner?	0 (0.0)	3 (0.9)	45 (13.4)	47 (13.9)	242 (71.8)
Q25. Have you been particularly self-conscious about your body shape when other people are around?	10 (3.0)	50 (14.9)	137 (40.8)	92 (27.4)	47 (14.0)
Q28. Are you more afraid of gaining weight as you age?	63 (18.5)	108 (31.8)	116 (34.1)	42 (12.4)	11 (3.2)

Ranking of BID subscales varied greatly by age. Advanced middle-aged women (51+ years of age) ranked highest in three out of the four subscales: interpersonal distrust, media influence and maturity fears. For the social comparison subscale, the 21-35 years old were most impacted. The middle-aged category of 36-50 year olds were ranked as having the lowest interpersonal distrust and social comparison. Yet, according to this data, as a woman moves from this age

category to the next older category, they score highest on the interpersonal distrust and social comparison scales. Why the dramatic reversal in these subscales as a woman ages merits further investigation. For all four subscales, overweight and obese women were ranked the highest indicating that as one's weight increases, interpersonal distrust, social comparison, media influence, and maturity fears also increase.

**Table 3. Rank order of BID Subscales by Age Groupings, Educational Level, Race and BMI (N=341).**

Variables	Interpersonal Distrust		Social Comparison		Media Influence		Maturity Fears	
	Rank	$\bar{X}$ (SD)	Rank	$\bar{X}$ (SD)	Rank	$\bar{X}$ (SD)	Rank	$\bar{X}$ (SD)
<b>Age Groupings</b>								
21-35 yrs	2	21.59(5.1)	1	20.95(5.3)	3	3.47(0.8)	3	5.40(1.5)
36-50 yrs	3	21.77(4.9)	3	21.84(4.9)	2	3.43(0.8)	2	5.11(1.4)
51+ years	1	21.43(4.8)	2	21.47(5.1)	1	3.33(0.8)	1	5.04(1.3)
<b>Educational Level</b>								
High School	2	20.88(5.1)	3	21.45(5.3)	1	3.14(0.9)	1	4.74(1.6)
2 Yr College	1	19.72(5.2)	1	19.71(5.1)	2	3.23(0.8)	2	4.90(1.3)
4 yr College	3	21.60(5.0)	2	21.09(4.8)	4	3.51(0.8)	3	5.13(1.4)
Grad School	4	22.27(4.6)	4	22.07(5.0)	3	3.46(0.8)	4	5.30(1.4)
<b>Race</b>								
White	1	21.41(4.8)	2	21.40(5.0)	2	3.41(0.8)	1	5.09(1.3)
Black	2	22.38(5.2)	3	21.51(5.2)	1	3.26(0.8)	3	5.46(1.6)
Hispanic	4	24.17(5.2)	4	23.83(5.0)	3	3.83(0.4)	4	6.20(1.9)
Asian	3	22.80(4.2)	1	21.20(5.0)	4	4.00(0.0)	2	5.20(1.3)
<b>BMI</b>								
Obese	1	18.02(4.8)	1	18.10(5.2)	1	3.00(0.9)	1	4.90(1.4)
Overweight	2	21.07(4.2)	2	20.88(4.6)	2	3.31(0.6)	2	5.01(1.2)
Normal	4	23.75(4.2)	3	24.05(3.6)	3	3.73(0.6)	3	5.38(1.4)
Underweight	3	23.75(4.2)	4	24.38(3.5)	4	3.88(0.4)	4	6.25(1.8)

<sup>a</sup>Rank order is determined by mean score, the lower the score the higher the attribute.

Significant differences among BID subscales by race, educational level, age groupings and BMI categories were calculated (Table 4). Race was not a significant factor in BID subscales ( $P > 0.05$ ), which disputes earlier research findings. Age was not a significant factor in BID subscales, indicating that factors that influence body image may remain constant over the course of a lifetime ( $P > 0.05$ ). Higher educational levels seem to protect one against interpersonal distrust and social comparison ( $P < 0.05$ ). Post-hoc tests revealed significant differences in both interpersonal distrust and social

comparison between 2-yr college degree and graduate school participants ( $P < 0.05$ ). Women who were overweight or obese suffer from all the negative aspects of BID at a significantly higher rate than normal or underweight women ( $P < 0.0001$ ). Post hoc analyses indicated significant differences between those who were overweight and normal or obese, and those who were obese and all other categories ( $P < 0.05$ ). The lack of significant differences among age categories suggest that BID is a universal, life-long experience.

**Table 4. Significant differences by BID subscales and demographics as determined by ANOVAs with mean scores reported (N=341).**

Source of Variation	Mean Squares	df	F value	Sign
<b>Interpersonal Distrust</b>				
Race	26.73	3	1.125	0.339
Educational Level	91.06	3	3.930	0.009***
Age Groupings	3.43	2	0.142	0.867
BMI Categories	748.39	3	43.51	<0.001***
<b>Social Comparison</b>				
Race	11.80	3	0.462	0.709
Educational Level	74.15	3	2.974	0.032*
Age Groupings	21.85	2	0.855	0.426
BMI Categories	677.70	3	35.03	<0.001***
<b>Media Influence</b>				
Race	1.24	3	1.951	0.121
Educational Level	1.64	3	2.585	0.053
Age Groupings	0.52	2	0.813	0.444
BMI Categories	10.84	3	19.83	<0.001***
<b>Maturity Fears</b>				
Race	3.40	3	1.821	0.143
Educational Level	4.21	3	2.262	0.081
Age Groupings	3.61	2	1.938	0.146
BMI Categories	8.39	3	4.583	<0.00***

(\*P ≤ 0.05; \*\* P≤ 0.01; \*\*\*P ≤0.001)

### Discussion

Current research has found that BID remains prevalent across the lifespan affecting both younger and older women (Webster *et al.*, 2003; Marcus *et al.*, 2007; Mangweth-Matzek *et al.*, 2006; Forman, 2005). However, much research has focused on either younger (under 18 years of age) or older women (over 65 years) (Price, 2010; Bey-Yesnan, McCormick, English, 2002), while this study looked at middle aged women (21-65 years of age). Furthermore, the contributing factors of BID are not fully understood. The results of this study contribute to the growing body of knowledge on BID among women across the lifespan as well as investigate subscale factors that play a role in BID.

BID remains a concern among younger and older women. This study found that higher educational levels seem to protect one against interpersonal distrust and social comparison. Similar to a previous study (Demarest, Allen, 2000), age and ethnic background were not significant factors in body image subscales. Higher Body Mass Index (BMI) significantly increased BID subscales of interpersonal distrust, social comparison, media influences, and maturity fears, which was supported by another research study (Marcus *et al.*, 2007). Unlike Forman and Davis (Peat *et al.*, 2008), there was no

significant difference between age groupings and media influence. Although research designs and sample population differ between the aforementioned studies and the current one, certain parallels can be drawn.

### Limitations and Directions for Future Research

There were several limitations to this study. First, this sample represented faculty and staff from one southeastern university and may not represent other geographical regions. The women of this study were well education and thus certain results may not be generalizable. Although the entire population was given an opportunity to participate, the sampling methodology was voluntary, self-select. A limitation to this type of methodology is that individuals with strong feelings or concerns about the topic under study are the ones that participate (McDermott *et al.*, 1997). Email solicitation and collection limits participation of those who do not use this means of correspondence. No information is known about non-respondents. All measurements relied on self-report, thus the extent to which participants were inclined to provide socially desirable responses is not fully known. BMI was calculated on self-reported height and weight which is not as accurate as direct measure. The study was a cross-sectional design and provided only a snapshot of current status. Understanding how BID perceptions among

individuals change over time would be better comprehended if a longitudinal study design was employed. In addition, this study did not measure BID to actual behavioral patterns. Lastly, the BID-WQ was initially validated in this study. The authors hope this questionnaire will be used by other researchers in various locations to further help establish psychometric measurements. Future studies may want to include additional subscales of BID that could contribute to self-perceptions of middle-aged woman.

### ***Translation to Health Education Practice***

Implications of this study are directed towards health education professionals that work and interact with middle-aged to older women. Understanding BID as a woman ages is key to increasing self-perception, self-esteem and happiness in this population. This study suggests more quantitative research that focuses on middle-aged women would be beneficial to address variations that exist according to age, gender, education, and race. Health professionals that are mindful of these differences can promote healthy body image within these groups in a more effective manner. Although it may be counterintuitive, working with advanced middle-aged women on self confidence, understanding media influence and realistic aging expectations is paramount to reduce BID in this group. Consistent with other research, middle-aged women are prone to have a certain amount of anxiety about aging that influences body image dissatisfaction (Slevec, Tiggemann, 2010).

A major challenge in the research of BID among middle-aged women is the lack of uniformity in the measurement of this construct (Grabe, Ward, Hyde, 2008). Uniformity in measurement might give practitioners clearer diagnosis abilities. In order to develop and prescribe appropriate interventions and treatment plans, the causes for BID must be understood. Instilling a multidimensional approach within diagnosis, intervention and treatment could allow middle-aged women to navigate successfully to a personal healthy perception of body and self. Further development of the BID-WQ as a valid and reliable instrument of which to identify individual subscales that might influence an individual's body image may lead to more meaningful interventions. For example if a woman is more influenced by maturity fears, the practitioner can speak with the individual about realistic aging process and what might help reduce the aging process such as exercise or a daily moisturizer. Tailoring education programs to the individual will hopefully give women some control of the aging process and confidence in their body image.

Current and past research findings support the strong need for BID education in women across the lifespan. Education was the only significant factor to protect women against some aspects of BID. Knowledge is power and this gives health educators a mechanism to positively impact women with BID. As more is understood about BID in middle-aged women, it is imperative to develop programs that are age-

appropriate. Because there are different factors that influence middle-aged women's body image, different teaching and application methods should be developed. When practitioners are working with older women that have BID, one may ask them to do a self-assessment on their eating and lifestyle behaviors. By doing this, clients are actively involved in the treatment process and become more aware of specific factors that contribute to their BID. Health educators could consider individuality and current stage of change when making recommendations and tailor programs accordingly.

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# REFEREED ARTICLE

## An Exploratory Study of Yoga Practice, Eating Problems, Depression, Anxiety and Desired Body Size Among Undergraduate Men and Women

By Brittany Birnbaum and Sharon H. Thompson

Coastal Carolina University

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### Abstract

In a limited number of studies, yoga practice has been found to counteract self-objectification and the negative psychological outcomes such as depression and eating disorders; therefore, this study examined yoga practice and eating problems, depression, anxiety, and desired body size among undergraduate students. Undergraduate students ( $n = 382$ ) completed a paper-pencil survey with demographic information, height, current and desired weight, yoga practice reports, and scales for eating problems (Eating Attitudes Test -26), depression (Major Depression Inventory), and anxiety (Generalized Anxiety Disorder -7 Scale). Using gender and yoga participation (yes/no) as independent variables and current BMI as a covariate in a General Linear Model Analysis of Variance, females had higher scores (*i.e.*: greater perceived problems) than males for eating problems ( $p < .0001$ ), depression ( $p < .0001$ ), anxiety ( $p < .0001$ ), and desired BMI ( $p < .0001$ ). Correlation coefficients revealed anxiety ( $p < .0001$ ), depression ( $p < .0001$ ) and yoga practice ( $p < .05$ ) were positively correlated for all respondents with eating problems (*i.e.* EAT-26 scores). Results from this study did not find reductions in eating problems scores for those who practiced yoga. Young people drawn to yoga may be struggling with body image issues, anxiety, and depression as a method of coping. Future researchers might examine how eating attitudes might change over time with continued yoga practice.

### Introduction

There are more than 10 million women and 1 million men battling eating disorders in the United States alone. Eating disorders are characterized by severe disturbances of eating behavior such as restrictive eating, extreme overeating, and bingeing and purging and are almost always accompanied by distress about body weight and shape, low self esteem, depression, and anxiety (National Eating Disorders Association [NEDA], 2006).

Body image is defined as the way one views himself or herself when looking in the mirror and the way one feels about his or her body, height, weight, and shape (NEDA, 2006). A negative body image is a distorted perception of body shape, which in turn leads to feelings of shame, self-consciousness, and anxiety about appearance. In America, body dissatisfaction is quite widespread with 25% of men and 45% of woman dieting on any given day. Unfortunately, the media often pushes messages that make it difficult for women to

accept their natural beauty. The average woman today is 5'4" and 140 pounds while the average television model is 5'11" and weighs 117 pounds. Fashion models represent only about 1% of the population and are thinner than 98% of American woman (NEDA, 2006).

A poor body image can lead to emotional distress, eating disorders, low self-esteem, dieting, depression, and anxiety (United States Department of Health and Human Services [USDHHS], 2008). Anxiety and depression are two of the most common mental illnesses affecting more than 35 million Americans each year. While anxiety is more prevalent in women than in men, studies are finding that the major gender difference for depression is that women are at higher risk than men to experience a first episode of depression. After that, there is no consistent gender difference in the severity or course of depression (Suicide and Mental Health Association International, 2006).

Anxiety disorders are illnesses marked by persistent, irrational and uncontrollable unease (Anxiety Disorders Association of America [ADAA], 2010). These disorders include generalized anxiety disorder, obsessive-compulsive disorder, and posttraumatic stress disorder. Depression is a condition in which a person feels discouraged, sad, hopeless, unmotivated, or disinterested in life (ADAA, 2010). Anxiety and depression, as well as suffering from a distorted body image can be directly correlated to the onset of eating disorders. Interestingly enough, just as these mental illnesses may increase the predisposition for the development of eating disorders, they can also be a result of a pre-existing problem with food, weight, and unhealthy dieting (NEDA, 2006).

There are many different ways to treat eating disorders and the accompanying side effects. The most successful thus far have been group and family therapy, nutritional counseling, medication, and in severe cases, medical care and monitoring (National Institute of Mental Health [NIMH], 2008). Recently, yoga has received much attention as a means of treatment because of its ability to help in overcoming body image issues and relieving symptoms of anxiety and depression (Haynie, 2007). Yoga is based on creating a mind-body-spirit balance through exercise, breathing, and meditation to help heal, cleanse, and strengthen the body (National Woman's Health Resource Center, 2008). Yoga has been known to improve energy levels, muscle relaxation, and body composition, as well as reduce stress, heart rate, blood pressure, and

improve overall physical fitness and strength (NIMH, 2008).

Eating disorder treatment centers such as the Renew Center in Florida and the New York Presbyterian Hospital in New York have yoga courses integrated into the treatment process for patients (Haynie, 2007). Yoga studios around the country are even offering workshops customized for those battling eating problems and low self-esteem. Coston, a recovering anorexic, runs three West Coast eating disorder clinics that use yoga as part of the healing process because she believes it plays an important role in helping patients recover (Haynie, 2007).

Recently, yoga has been incorporated into some physical education classes around the country. At the 2009 Alliance for Health, Physical Education, Recreation, and Dance (AAHPERD) National Convention there were several presentations on yoga, including “Yoga for High School Physical Education”, “Power Yoga to Empower You!”, and “Yoga in schools: Ethical Concerns about its Religious Connection” (2009). Due to paucity of research on yoga practice and how it may reduce stress and eating disorders (Douglas, 2009), the purpose of this study was to determine if yoga practice affected eating problems, depression, anxiety, and desired body size among young adults.

## Methods

Data were collected through a paper and pencil survey distributed to a convenience sample of 386 college-aged students at a Southeastern coastal university. Fifty-seven ( $n = 57$ ) students were enrolled in an introductory yoga course ( $n = 57$ ) while others ( $n = 329$ ) were enrolled in either introductory health, strength training or group fitness undergraduate courses. Prior to survey administration, this research was approved by the university’s Institutional Review Board.

*Demographic information.* Demographic information obtained from the students consisted of gender, age, height, weight, desired weight, and race.

*Current Body Mass Index (BMI) and desired BMI.* Height and current and desired weight were self-reported. Height was converted to meters and the two values for weight were converted into kilograms and then used to calculate each participant’s current BMI and desired BMI.

BMI is a function of weight adjusted for height and is one of the most commonly used methods of weight categorization (United States Department of Health and Human Services, 1988). BMI has previously been shown to be related to problem eating and body dissatisfaction. After each participant’s current BMI value was calculated, they were then placed into BMI categories of underweight, average weight, overweight and obese. For the purpose of gender comparison in Fisher’s Exact test data analysis, these were collapsed into 2 groups: underweight/average weight and overweight/obese.

*Yoga practice.* Partakers were asked to respond to the survey item, “How many times a week do you practice yoga”? An-

swers ranged from 0 times per week to > 5 times per week. Those who responded with “0” times per week were noted as not practicing yoga.

*Eating problems.* In order to determine if participants had eating problems, the survey included the Eating Attitudes Test (EAT-26) (Garner, Olmsted, Garfinkel, & Bohr, 1982). This 26 question survey screens for behaviors and beliefs that are similar to those with clinical eating disorders. The EAT-26 has an accuracy of at least 90% when used to diagnose those with and without eating disorders (O’Halloran & Mintz, 2000). The test includes statements such as, “I feel that food controls my life.”, “I avoid eating when I’m hungry.” and “I’m terrified about being overweight.”. For all responses, there were 6 answers to choose from: always, usually, often, some, rarely, and never.

*Depression.* To evaluate whether the participants suffered from depression, the Major Depression Inventory (World Health Organization, 2006) was used. The Major Depression Inventory (MDI) is a 12 question self-administered survey, asking participants how often they have felt a certain way. For example, “How much of the time have you felt low in spirits or sad?”, “How much of the time have you lost interest in your daily activities?” and “How much of the time have you felt that life wasn’t worth living?”. There were six answers to choose from, including: all the time, most of the time, slightly less than half the time, and at no time. The MDI received a reliability score of a satisfactory 0.89 as indicated with Cronbach’s alpha (Smits, Peen, Noteboom, Dekker, & Cuijpers, 2007)

*Anxiety.* Students were also given the Generalized Anxiety Disorder - 7 Scale to measure for characteristics of anxiety problems (Williams, Spitzer, Lowe, & Kroenke, 2006). Participants were asked how many times over the last two weeks they have acted a certain way, for example, “Worrying too much about certain things.”, “Feeling nervous, anxious, or on the edge.” and “Feeling afraid something awful might happen.” There were four answers to choose from: not at all, several days, more than half the days, and nearly every day. The consistency of the GAD-7 was exceptional, with a score of .92 using Cronbach’s alpha. Test reliability was also excellent with an intraclass correlation of .83 (Williams et al., 2006).

## Data Analysis

Means, frequencies, t-tests, Fisher’s Exact tests, correlation coefficients and analysis of variance were used to analyze the data. To assess interactions between the independent variables of gender (male/female), yoga participation (yes/no) and test for equal current BMI slopes, the GLM Analysis of Variance was used for the dependent variables of eating problems, depression, anxiety, depression, and desired BMI. The model was first run with interaction terms for the independent variables and if these were not significant, they were removed and reanalyzed. Least square means were calculated to adjust each dependent for independent variables. Statistical significance was established at  $p < .05$ .

## Results

*Demographic.* The final sample consisted of 382 college-aged students since 4 surveys were incomplete. There were 149 men (39%) and 233 women (61%). Race results revealed respondents were 76% Caucasian, 18.1% African American, and 6% of other ethnicity. Overall, t-tests revealed mean age was not statistically significant by gender (see Table 1 for demographic information).

**Table 1. Means and percentages for demographic information for undergraduate students (n = 382).**

Characteristic	Male		Female	
	Mean	SD	Mean	SD
Age (y)	20.68	4.13	20.41	2.77
Current BMI*	26.09	4.81	22.57	3.83
Desired BMI*	26.06	3.51	21.06	2.45
	Male%		Female%	
Practice Yoga*	81.16%		33.48%	
Current BMI Categories				
Underweight	14.77%		12.88%	
Average weight	40.94%		66.95%	
Overweight	32.21%		15.45%	
Obese	4.72%		12.08%	

\*p < .0001

*Current Body Mass Index (BMI) and desired BMI.* Using a t-test, current and desired BMI scores were found to be significant by gender (p < .0001) with females having lower values than males. Current BMI values were collapsed into two categories (Underweight/Average Weight & Overweight/Obese) to examine differences using a Fisher Exact test. Significant differences were found (p<.05) meaning the categories were different by gender (see Table 2).

**Table 2. Current Body Mass Index (BMI): Categories of weight by gender (n=382).\***

	Underweight/Average Weight BMI < 25	Overweight/Obese BMI > 25
Male	55.70% (n=83)	44.30% (n=66)
Female	79.83% (n=186)	20.17% (n=47)

\*  $\chi^2$  (1, n = 382), p < .0001].

Note: BMI = Body Mass Index (kg/m<sup>2</sup>)

*Yoga practice.* Based on self-reports, 76.3% (n=293) of participants did not report yoga practice. Of the remaining participants, 21.6% (n=83) practiced yoga 1-3 times a week, 1.8% (n=7) practiced yoga 4-6 times a week, and 0.3% (n=1) practiced 7-10 times a week. Chi Square tests were performed

here but not valid because 50% of cells had counts less than 5. One-third of women (33.48%) and 8.16% of men reported yoga practice.

A t-test procedure revealed significant differences in current BMI (p = 0.0140) and desired BMI mean scores (p=0.0003) by yoga practice. Those who reported practicing yoga had lower means for both current and desired BMI scores (see Table 3).

**Table 3. Current and desired BMI by reports of yoga practice (n=374).**

	Practice Yoga		Do not practice yoga		
	Mean	SD	Mean	SD	
Current BMI*	22.88	3.09	24.29	4.89	0.0140*
Desired BMI*	21.64	2.84	23.43	3.99	0.0003*

\*p < .05

*Depression.* For depression scores, General Linear Model analysis of variance revealed significant differences only by gender (p<.0001). Females had a significantly higher mean for depression scores of 12.30 (SD= 10.99) compared to males (m=6.99, SD=11.84). This indicates that females scored higher on the MDI than males, showing more incidence of depressive behavior. This does not necessarily mean the women had high rates of clinical depression because the cutoff score for mild depression, moderate depression, severe depression, and major depression are 14, 20, 27 and 33, respectively. No significant differences were found by yoga practice (yes/no) or current BMI for depression scores.

*Anxiety.* When using the GLM Analysis of Variance to examine gender, yoga participation, current BMI and anxiety, there were significant differences in the GAD-7 scores by gender. Females had a significantly higher mean of 5.50 (SD= 4.9) than males' score of 3.38 (SD=5.2, p<0.0001). This indicates that females scored higher on the GAD-7 than males, meaning possible increased anxiety problems.

A significant interaction was also found for current BMI by gender (p = .0158). For each unit increase in females' current BMI scores, anxiety scores increased by 27.5%.

*Eating problems.* Using the GLM Analysis of Variance, there were significant differences in means for eating problems (EAT-26 scores) only by gender. The females had a significantly higher mean of 3.42 on the EAT-26 (SD = 3.35) than males at 1.62 (SD= 3.62, p < .0001). This indicates these women may have increased concern about eating and weight compared to the men.

*Desired BMI.* Again using the GLM Analysis of Variance, there were significant differences found for both gender and BMI. Females desired a lower BMI (m = 21.83, SD = 1.63) than males (m=24.80, SD=1.74, p < .0001). For all participants, for every unit increase in current BMI score, values for

desired BMI increased by 58.5%,  $p < .0001$ ).

*Depression, anxiety, and eating problems.* Pearson correlation coefficients were next calculated to determine if eating problems (EAT-26 scores) were significantly correlated with yoga practice, anxiety (GAD-7 scores), depression (MDI scores), and desired BMI. Anxiety and depression were positively correlated with EAT=26 scores having coefficients of .29 ( $p < .0001$ ) and .36 ( $p < .0001$ ), respectively. Desired BMI was negatively correlated with eating problems with a coefficient of  $-.11$  ( $p < .05$ ), meaning as eating problems increased, desired BMI decreased. Yoga practice was positively correlated with a coefficient of  $.10$  ( $p < .05$ ). This indicates as eating problems increased, respondents reported increased yoga practice (see Table 4).

**Table 4. Pearson correlations coefficients for eating problems (EAT-26 scores) as compared to anxiety (GAD-7 scores), depression (MDI scores), desired BMI, and reports of yoga practice.**

Variables	M	SD	Correlations with eating problems (EAT-26 scores)
Anxiety (GAD-7 scores)	4.3	4.5	0.29*
Depression (MDI scores)	10.1	10.2	0.36*
Desired BMI	23	3.9	-0.11**
Days per week of yoga practice	.23	4.9	0.10**

\* $p < 0.0001$

\*\* $p < 0.05$

## Discussion

The purpose of this study was to examine the effect of yoga practice on eating problems, depression, anxiety, and desired body size among undergraduate students. Although no significant results were found in direct correlation with yoga reducing eating problems, depression, anxiety or desired body size, noteworthy results relating to gender differences in these areas are worth reporting.

According to the data collected in this study, it was found that current BMI and desired BMI were statistically significant by gender. The men in the study had higher BMI scores than women and desired a BMI in the overweight category; furthermore, for all participants, as BMI increased, so did desired BMI. Previously researchers have found these same gender and weight differences related to body size satisfaction (Anderson, Lundgren, Shapiro, & Paulosky, 2003; Halliwell & Harvey, 2006; Peterson, Paulson, & Williams, 2007). Anderson et al. (2003) found that women had lower BMI goals than men, and nonoverweight participants had lower BMI goals than overweight participants. Nonoverweight woman

chose “dream weights” that would require them to lose almost 10% of their current body weight. Nonoverweight men chose “dream weights” that would mean an increase in BMI. These gender differences are likely due to women’s desire to be thinner and men’s desire to be more muscular. When one has rigid standards for beauty and body size, this often leads to body image dissatisfaction and mental health issues.

Eating problems were statistically significant by gender as well. Females scored higher on the EAT-26 than males did, indicating more risk of eating problems. These women expressed more dissatisfaction with their bodies than men and more women than men expressed a desire to weigh less. These findings were in concurrence with previous studies showing women were more likely than men to demonstrate eating problems and symptoms of eating disorders (Mintz, McCaulay, & Glen, 1988; Striegel-Moore *et al.*, 2009).

The results of this study indicated that, in association with eating problems, for this population there were no significant differences among those who reported yoga practice versus those who did not. This finding is similar to a previous study where researchers found yoga practice had no effect on eating disorders (Mitchell, Mazzeo, Rausch, & Cooke, 2007). Mitchell and colleagues recruited body dissatisfied college-age females and randomly assigned them to one of three groups: yoga, cognitive dissonance, and control groups. Post-intervention, the dissonance group was the only group of the three with lower scores on measures of body dissatisfaction, anxiety, desire to be thin and disordered eating [*i.e.*: less distress in these areas] (2007).

A few researchers have reported that yoga practice increases body satisfaction. One such study found that those who practiced yoga reported greater satisfaction with their appearance and fewer disordered eating attitudes compared to those who did not practice yoga; however, it was also found that for yoga practitioners, more yoga experience, in terms of number of hours practiced per week and level of expertise, was linked with less self-objectification and greater body satisfaction, respectively (Daubenmier, 2005). This is one weakness that may have limited the results of this study; this sample of college-aged men and women may not have had much experience in yoga, with few practicing yoga more than twice a week. Fifty-seven of the 91 participants who reported yoga practice were enrolled in an introductory, one-credit class; therefore, additional research is needed to determine if continued yoga practice might impact emotional health and eating problems.

Depression and anxiety scores were higher in these college-aged women than in men. Joiner and Blalock (1995) also found co-morbid depression and anxiety were approximately 6.6 times more common among women than men. They also reported that mixed anxiety-depression was more prevalent in women than men. According to Nolen-Hoeksema (1987), biological hypotheses suggest that the greater susceptibility

among women is due to genetically transmitted causes due to reproductive cycle mood changes (as cited by Joiner & Blalock, 1995).

In this study, depression and eating problems, as well as anxiety and eating problems were significantly correlated. Some of these disorders may have increased the development of an eating disorder and some could be consequences of the disorder. Many times, eating disorders, depression, and anxiety emphasize each other creating a viscous circle that is difficult to escape.

In conclusion, those working with young adults should be aware of the emotional health needs of females and determine ways to help them cope with possible anxiety, depression, and food/body image issues. Because yoga practice among this college population was significantly correlated with eating problems, this might indicate that young people who enroll in yoga classes may be drawn to take this class as a way to seek body acceptance and to mediate stress. With this in mind, those who teach yoga classes as a part of the physical education curriculum might take care to use body approving statements and educational messages about nurturing your body through proper nutrition and self-care.

There are a few changes to this study that may have improved the results. Techniques used to gain information could be altered for improvement. Using a self-reported, paper and pencil survey to collect data may lead to the risk of over or under reporting. Also, including subjects with greater experience in yoga practice would have been a better predictor of yoga's role in the treatment of eating problems and the relationship it has on depression, anxiety, and body image.

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