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Disordered Eating Risk and Body Image Dissatisfaction of Division I Male and Female Cheerleaders

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Disordered Eating Risk and Body Image Dissatisfaction of Division I Male and Female
Cheerleaders

A thesis submitted in partial fulfillment
of the requirements for the degree of
Master of Education in Recreation and Sport Management

by

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The Pennsylvania State University
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Abstract

The sport of cheerleading is growing both in the high school and college setting, however there is little research on cheerleaders specifically, both sideline and competitive. It is clear that while this sport does not benefit from being affiliated with the NCAA, the athletes are still at large risk for disordered eating and eating disorders, and are in need of more accurate screening and prevention methods. With the lack of cheerleading studies in general, there is an even larger scarcity of studies that focus on males in cheerleading. The current study aims to fill the gap in the research regarding disordered eating risk in both male and female Division I cheerleaders by analyzing the perceived level of body satisfaction. Therefore, the purpose of this study is to gain more awareness on the body perceptions of collegiate cheerleaders, and investigate if male cheerleaders suffer from similar levels of disordered eating and body image issues as compared to their female counterparts.

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Introduction

Collegiate cheerleaders, both male and female, are grouped together in the category of aesthetic sports (leanness sports) which encompasses sports such as gymnastics, dance, and figure skating (Byrne & McLean, 2002; Sundgot-Borgen & Torstveit, 2004; Torres-McGehee et al., 2009). In these sports, the goal is not only to be perfect in routines, but also perfect in physical aesthetics. This “perfect” or ideal look can frequently lead athletes to have body image issues and disordered eating (Nakajima & Valdez, 2013; Torres-McGehee et al., 2009). Female athletes that compete in aesthetic or leanness sports have the greatest risk of disordered eating when compared to their male counterparts or the general public (Sundgot-Borgen & Torstveit, 2004). Similarly, Byrne and Mclean (2002) found that athletes, especially females, in sports that place an emphasis on a thin or particular body type, have an increased risk of disordered eating compared to the general public and normal-build sports.

Collegiate cheerleading can be categorized into either competitive cheering or sideline cheering at sporting events. Many cheer teams are solely sideline teams, however those that also compete have the added stress of perfection in a high-stakes environment (Nakajima & Valdez, 2013). Not only do these athletes (competitive or sideline) face the pressure to maintain an ideal aesthetic by factors such as televised media coverage, social media platforms, regular evaluations of their aesthetic qualities, physically demanding training regimes (Torres-McGehee, Monsma, Dompier, & Washburn, 2012) and revealing uniforms (Reel & Gill, 1996), but their teammates and coaches add social pressure as well. Although college teams are moving away from concrete weight limits and weigh-ins, pressure from coaches to maintain a certain look is still found to be prevalent (Reel & Gill, 1996).

In the early twentieth century, women started to emerge in aesthetic sports such as figure skating and gymnastic because of the “grace and beauty” of the sports themselves (Hart, 1981; Loy, McLachlan, and Booth, 2009). From here female sports such as tennis and golf arose to keep the attractive “body line” sports growing and to conform to femininity (Coakley, 2015). This idea of female ideology can be translated to modern day cheerleading. Female cheerleaders are still expected to keep these “body lines” by remaining physically fit while at the same time wearing revealing clothing and having their make-up and hair “perfect”. Whereas the gender ideology for males is different. Males are supposed to be physically strong and portray masculinity (Coakley, 2015). In cheerleading, men are expected to also be physically fit and to be muscularly strong. These gender ideologies can be tremendous stressors on both male and female cheerleaders as they further emphasize the need to look “perfect” in front of fans and television cameras.

Reel and Gill (1998) found that female cheerleaders on average want to lose up to 14 pounds while males want to gain up to 38 pounds. The National Collegiate Athletic Association (NCAA) regulates sports such as wrestling for weight loss and weight loss methods (e.g. taking banned dietary supplements), however since collegiate cheerleading is not an NCAA sport, there are no regulations of any kind (Nakajima & Valdez, 2013; Torres-McGehee et al., 2012). The non-classification of cheerleading as a varsity sport has been debated, most prominently in a lawsuit at Quinnipiac University in 2009 (Sawyer, 2010). The court ruled that competitive cheerleading has all the necessary characteristics of a varsity sport, however the NCAA still does not recognize it as such (Sawyer, 2010). Since cheerleading is not recognized as a NCAA sport, little research can be found specifically on cheerleaders. With this being said, there is a plethora of studies on athletes, specifically female athletes, regarding eating disorders, disordered eating,

body image issues, and weight concerns. The term ‘Division I’ is used for NCAA affiliated universities that compete in that specific division. However, for the purpose of this study, participants will be labeled as ‘Division I’ and ‘NCAA’ as these are the universities and schools that were targeted.

Currently, the Varsity Spirit Corporation is the leader in cheerleading development at all levels. The company is very thorough on safety in cheerleading and have created a coaches’ guide on promoting a healthy body image (“Coaches – Promoting,” n.d.). However, as previously stated, the “perfect” look is still prevalent in athletes and thus there are competing ideals. The sport of cheerleading is growing every year at every level. There are more than 3.3 million Americans of all age groups who participate in cheerleading with 1.3 million of them cheering more than 60 days and 1.5 million competing at the competitive level (Active Marketing Group, 2008). Even with this amount of participation there is little research on cheerleaders specifically, both sideline and competitive.

It is clear that while this sport does not benefit from being affiliated with the NCAA, the athletes are still at large risk for disordered eating and eating disorders and are in need of more accurate screening and prevention methods. With the lack of cheerleading studies in general, there is an even larger scarcity of studies that focus on males in cheerleading. The current study aims to fill the gap in the research regarding disordered eating risk in both male and female Division I cheerleaders by analyzing the perceived level of body dissatisfaction. Division I cheerleaders will be the primary focus for this study because these athletes have the added stressor of national televised exposure in sports such as football or basketball. Therefore, the purpose of this study is to gain more awareness on the body perceptions of collegiate

cheerleaders and investigate if Division I male cheerleaders suffer from similar levels of disordered eating and body image issues as compared to their female counterparts.

Literature Review

Eating Disorder and Disordered Eating

The term ‘eating disorder’ is the medical terminology associated primarily with anorexia nervosa and bulimia nervosa (Sundgot-Borgen & Torstveit, 2010). ‘Disordered eating’ refers to a broader sense of abnormal eating conditions and dieting (Sundgot-Borgen & Torstveit, 2010). Wells, Chin, Tacke, and Bunn (2015) found that social pressures were the primary cause for an increased risk of disordered eating in females competing in lean sports compared to females in non-lean sports. Forney and Ward (2013) found that college females were susceptible to disordered eating when their peers believed that thinness, acceptability of body image, and perceived prevalence of disordered eating was high, whereas men were only susceptible to disordered eating when they wanted to be accepted by their peers. Forney and Ward (2013) also found that Body Mass Index (BMI) and body dissatisfaction were significantly associated to disordered eating in men.

Sundgot-Borgen and Torstveit (2004) found 25% of elite female athletes in endurance sports, aesthetic sports, and weight class sports had a clinical eating disorder, compared to 9% of the general population. In other aesthetic sports or activities such as aerobics, auxiliary performers (dancers, color guard, and majorettes), cross country, diving, figure skating, gymnastics and modern dance, eating disorder risk ranged from 24%-50% (Black, Larkin, Coaster, Leverenz & Abood, 2003; Greenleaf, Pretie, Carter, & Reel, 2009; Sundgot-Borgen & Torstveit, 2004). It was also found that cheerleading is most similar to auxiliary performers at 29.7% (Torres-McGehee et al., 2009). Female athletes can also be susceptible to compulsive

exercise habits to combat an eating disorder, and the combination of the two can lead to severe bodily harm such as amenorrhea, brachycardia, electrolyte abnormalities, dehydration, dental erosion, and hypotension (Comerci, 1990). Similar research has not been completed in reference to male cheerleaders and clinical eating disorders.

Body Image

Body image and disordered eating or eating disorders are also closely related. Body image is explained by the National Eating Disorders Association (2016) as a positive or negative standpoint on how a person perceives themselves in the mirror or in their mind. Eating disorders have been shown to be closely linked to body image and body dissatisfaction (Tiggemann & Lynch, 2001). An example of this can be recognized in research by Killion and Culpepper (2014) that found that dancers tend to engage in disordered eating and place a high importance on how they look even with a low percent body fat. This research can further reflect on similar aesthetic sports such as cheerleading.

Weekly or daily weigh-ins can also influence disordered eating and body image issues. Researchers found that male athletes that are in sports that have weigh-ins, either required or voluntary, experience the greatest prevalence of altering body appearance (Galli, Petrie, & Chatterton, 2017). These alterations typically occur by means of extreme dieting (i.e. restriction of nutritional intake) or excessive workouts, and this phenomenon was even shown to be heightened the more days per week the athletes weigh themselves (Galli et al., 2017). Although cheer teams are moving away from formal weigh-ins, athletes are still expected to be physically fit and stay below certain weights. Other factors that play a role in maintaining body image are the use of vomiting, laxatives, diuretics, diet pills, steroids, and excessive use of a sauna or steam rooms, all for the purpose of losing weight and looking a certain way (Galli et al., 2017).

Johnson, Powers, and Dick (1999) found that both male and female athletes have used these extreme ways of weight loss for body image purposes. These dangerous forms of maintaining body image often lead to or accompany clinical eating disorders. Overall, there is a 35% risk of anorexia nervosa and 38% risk of bulimia nervosa in female athletes and 9.5% and 38% respectively for male athletes (Johnson et al., 1999). However, this same study found that of the 1,445 athletes tested, only 1.1% of females and 0% of males were clinically diagnosed with an eating disorder.

NCAA Regulations

As previously stated, cheerleading is not an NCAA sport and is not regulated by the same rules as traditional sports within the NCAA. While the rules may not be as strict, collegiate cheerleaders are still expected to be in top physical form in order to perform and stunt. Due to the lack of regulation and high physical and aesthetic demands, this environment can encourage athletes to turn to performance enhancing substances (PES). PES's are used to describe dietary supplements, both illegal and legal, that are used by athletes for athletic performance gains and to change body image (LaBotz & Griesemer, 2016). Although PES use is more prevalent in the adolescent age group, it is also seen in the college population (LaBotz & Griesemer, 2016). The NCAA has an available web page that lays out banned and non-banned substances, however due to the absence of cheerleading from NCAA guidelines, this list has no effect on cheerleaders (NCAA, 2017). LaBotz and Griesemer's (2016) report found that men are at a higher risk of PES use than females, however both genders are subject to risk factors associated with PES including: body image dissatisfaction, higher BMI, exposure to appearance-oriented fitness media, use of alcohol or drugs, and other risk-taking behaviors.

Many PES's are over-the-counter and the most common include protein supplements, creatine, and caffeine. However, these supplements are sold as dietary supplements and are not regulated by the Food and Drug Administration (FDA), and thus can be contaminated by harmful substances (LaBotz & Griesemer, 2016). Currently, there is no regulation for any PES in collegiate cheerleading due to the lack of government by the NCAA. Also, due to the lack of NCAA regulations, cheerleaders at universities are not required to have preparticipation exams where disordered eating can be screened for, and there is no requirement for medical personnel for cheer teams which would act as another layer of screening of disordered eating behaviors (Bonci et al., 2008).

Television/Social Media Exposure and Psychological Theories

Another aspect that can lead to body image issues is the ever-growing world of social media. Social media is extremely prevalent in today's world of sport. With television contracts and various social media platforms, cheerleaders are subject to up-close video or photography expanding on a large media scale. The Pew Research Center found that 73% of adults in the United States online use social networking sites (Duggan & Smith, 2014). In 2016, the NCAA had over 49 million fans attend football games alone, not including any of the other sports in which cheer squads frequently attend ("2016 Report", 2017). With so much media exposure in cheerleading and almost three quarters of the population on social media, this often leads to athletes wanting to look a specific way. In order to cope with this, many athletes can turn to other athletes to see what they are "supposed" to look like.

The social comparison theory proposes that there is a fundamental desire within individuals to evaluate themselves by comparing their opinions and abilities to others (Festinger, 1954). Comparing oneself to someone superior with positive characteristics is known as

“upward comparison”, whereas comparing to someone inferior with negative characteristics is labeled “downward comparison” (Wills, 1981; Wood, 1989). Lockwood and Kunda (1997) found that upward comparison can be beneficial as individuals strive to be like the person they are comparing themselves to. Conversely, more often this upward comparison causes individuals to feel inadequate, have poorer self-evaluations, and experience negative affect due to not being able to ever look like the compared individuals (Marsh & Parker, 1984; Morse & Gergen, 1970; Pyszczynski, Greenberg, & LaPrelle, 1985) It has further been found that when women specifically make comparisons between themselves and idealized images (i.e. ideal athlete appearance), their perceptions about the importance of maintaining a perfect appearance are confirmed, and they become more motivated to achieve often unattainable goals (Wood & Taylor, 1991). This motivation only helps promote the desire to look a certain way, thus affecting an athlete’s perception of their own body.

Bandura’s Social Cognitive Theory also explains that individuals learn from observing others, called models, and these models influence how individuals behave (Bandura, Ross, & Ross, 1961). Bissell (2004) explained that this theory suggests that audience members are more likely to demonstrate the behaviors of attractive people in the public eye that are rewarded for their behavior rather than people who are considered less attractive and punished for their behavior. This theory can be expanded to social media platforms as well as television for cheerleaders. With images and video readily available at anyone’s fingertips, it is easy to look at other individuals and start comparing. A person’s social network can be quantified and qualified by the people in the network and by the amount of comments, replies, and virtual “likes”, and thus can be an upward comparison target in terms of popularity, sociability, or perceived social capital (Kim & Lee, 2011, Vitak & Ellison, 2013). By observing the activity of their own social

network, individuals are not only susceptible to upward comparison of others but “social” upward comparison of themselves (Vogel, Rose, Roberts, & Eckles, 2014). This means that individuals, and especially cheer athletes, can start determining self-worth by what other people think of them.

Methods

Design

A comparative design will be used for this study. This study consists of a survey to be completed by NCAA Division I male and female cheerleaders from universities across the United States. The survey will include a personal demographic questionnaire, Eating Attitudes Test-26, and sex specific silhouette questionnaire.

The first section of the survey will consist of the demographic questionnaire. In this section participants will be asked for their age, gender, and year in school. Participants will also self-report height and weight. With this self-report information, each participant’s BMI will be able to be calculated. By obtaining participant’s BMI through height and weight information, they can be sorted in groups such as “underweight”, “very underweight”, “average and above”, etc. compared to age-matched norms (Garner, Olmsted, Bohr, & Garfinkel, 1982). If a participant does not fall in either “underweight” or “very underweight” it does not mean they do not have an eating disorder, but rather that it is unlikely they have anorexia nervosa (Garner et al., 1982),

The next section of the survey will be the Eating Attitudes Test, or simply the EAT-26. This survey consists of a 26-item questionnaire which is the most widely used and well validated standardized test used as a screening tool for eating disorders and disordered eating characteristics with a reliability of $\alpha = .90$ (Garner et al., 1982). The EAT-26 is not a diagnostic

tool but is used as a method to detect the potential possibility of an eating disorder or of disordered eating. This test has three subscales incorporated into it: dieting (questions 1, 6, 7, 10, 11, 12, 14, 16, 17, 22, 23, 24, and 26), bulimia and food preoccupation (questions 3, 4, 9, 18, 21, and 25), and oral control (questions 2, 5, 8, 13, 15, 19, and 20). Items are measured on a 5-point Likert scale ranging from ‘never’ to ‘always’. When scoring the EAT-26, questions 1-25 are scored by giving 3 points to ‘always’, 2 points to ‘usually’, 1 point to ‘often’ and 0 points for the rest of the answers. Question 26 is the only exception where scoring is reversed with 3 points assigned to ‘never’, 2 points to ‘rarely’, 1 point to ‘sometimes’ and 0 for any other answer. Individuals that score 20 points or more on the EAT-26 could potentially have an eating disorder and should consult a medical professional (Dotti & Lazzari, 1998; Patton, Johnson-Sabine, Wood, Mann, & Wakeling, 1990). The survey also asks five specific behavioral questions that could be indicative of an eating disorder. Participants are flagged for an eating disorder risk if their BMI is “underweight”, or extremely “underweight”, the score on the Eat-26 is 20 or more, or if the behavioral questions indicate possible eating disorder symptoms (Garner et al., 1982).

The gender-specific BMI Figural Stimuli Silhouette Survey (SIL) will be used to assess participant’s perceived and desired body images. Each gender has nine silhouettes to choose from, ranging from thin to obese. Each silhouette corresponds to a specific BMI (1 = 18.3, 2 = 19.3, 3 = 20.9, 4 = 23.1, 5 = 26.2, 6 = 29.9, 7 = 34.3, 8 = 38.6, 9 = 45.4) (Bulik et al, 2001). Participants will answer the question “choose the figure that reflects how you think you currently look” by choosing the silhouette they identify with on a normal basis, or the “self-perceived body size” (Killion & Culpepper, 2014). This will give the participants a perceived BMI which will be cross referenced with the BMI that is collected with the EAT-26. Then participants will be asked to answer the question “choose your ideal body size” which will be labeled “ideal body

size” (Killion & Culpepper, 2014). Body image dissatisfaction will be calculated as the difference between self-perceived body size and ideal body size (Garner, Garfinkel, & O’Shaughnessy, 1985; Flynn & Fitzgibbon, 1996; Furnham, Badmin, & Sneade, 2002; Thompson, 1996). The greater the difference between “perceived” and “ideal” body size, the higher the “body size discrepancy value” which yields a low satisfaction with body size (Killion & Culpepper, 2014).

Participants

Following procedures from Torres-McGee et al. (2012), cheerleading coaches and spirit directors were contacted via email for access to their respective teams. A total of 97 college-age Division I cheerleading squad members (37 males and 60 females) from universities across the United States were recruited for this study. The survey was given to the coaches and distributed via email.

Procedures

After obtaining Institutional Review Board (IRB) approval, the survey was sent out to Division I cheerleading coaches and program directors. Participants completed the demographic survey, Eating Attitudes Test-26, and sex specific silhouette questionnaire. Reminder emails were sent to coaches and directors at 10 and 20 days after the opening of the survey for those that have not completed it. The survey was open for a total of 30 days. This time frame was consistent with previous studies (Torres-McGehee et al., 2012).

Data Analysis

Statistical analyses were performed using the Statistical Package for Social Science (V. 23.0, SPSS Inc., Chicago, IL). First, self-reported measurements were analyzed for height and weight and BMI. Then the calculated BMI and the perceived body image and ideal body image

were analyzed. This was done by examining the means from the Likert scale and the specific BMI associated with each SIL. Next, participants were separated by gender and paired samples t-test were performed to compare the differences of the two groups. Variables that were looked at included body dissatisfaction score (perceived-ideal), the eating disorder risk according to the EAT-26, the sum of the EAT-26 score, and every subscale and behavioral questions of the EAT-26. A cross tabulation test was run to analyze rates of risk of eating disorder when looking at males and females. The participants were then split into underclassmen (freshmen and sophomores) and upperclassmen (juniors, seniors, and above seniors) and all previous tests were performed (t-test, cross tabulations). Next, the participants were split into age groups with one group ranging from 18-20-year-olds and the other group ranging from 21-25-year-olds. The age groups were determined by using the mean age of all participants (20.1 years old). Again, both t-tests and cross tabulation tests were performed. A correlation test was used to analyze BMI, perceived body image, ideal body image, body image dissatisfaction score, and the sum of the EAT-26. Finally, three ROC curves were performed to analyze if BMI is an indicator for an eating disorder risk. This was performed for all participants, males and females. After obtaining the ROC curves, cut-off points were determined. With the cut-off points established the area under the curve was found and a cross tabulation was made for the number of participants with an eating disorder risk above and below the cut-off point. With the cross tabulation created for these three groups, sensitivity, specificity, and relative risk were found. Statistical significance was set at $p < .05$ for all analyses.

Results

At the completion of data collection, 97 Division I cheerleading athletes had completed the survey. There was a total of 37 male and 60 female participants from twelve universities

across the United States. The survey was sent to 97 Division I co-ed cheerleading programs which is a response rate of 12.3%. Participant demographics can be found in Table 1. Overall, 46 participants (47.4%) met the criteria of an eating disorder based on BMI, EAT-26 behavior, and EAT-26 score. When separating the three variables of BMI, EAT-26 behavior, and EAT-26 score, 2 participants were at risk solely on their BMI, 26 were at risk solely on EAT-26 behavior, 5 were a risk solely on EAT-26 score, and 18 were at risk in multiple variables. Of the EAT-26 subscales, 10 respondents were labeled at risk solely from the dieting scale items. The total calculated BMI was 24.0 ± 3.6 with men having a statistically significant greater BMI than women (27.1 ± 3.0 versus 22.1 ± 2.4 , $p < .001$). The mean age of all participants is 20.1 years of age.

When comparing males and females, there were no significant differences found in any variable, showing that both men and women are equally affected by body dissatisfaction and risk of disordered eating. This is shown through a cross-tabulations analysis that revealed 43.2% of males and 50% of females met the criteria of an eating disorder ($p = .54$). Further information on these relationships are reported in Table 3, Table 4 and Figure 1.

No significant differences were found when separating the participants into underclassmen ($n = 47$) and upperclassmen ($n = 50$), with only one exception for the behavior question, "Have you lost 20 pounds or more in 6 months?". Underclassmen were found to be more likely to answer "yes" to this question than were upperclassmen ($p = .047$). The cross tabulation revealed that there was no greater proportion of underclassman at risk of an eating disorder compared to upper classman at risk. When comparing each class individually, underclassmen were found to be 46.8% of at risk and upperclassmen were found to be 48% at

risk of an eating disorder. Further information on these relationships are reported in Table 5, Table 6 and Figure 2.

When separating the participants into age groups, no significant differences were found in either the t-tests or the cross-tabulation. When comparing each age group individually, 47.5% of 18-20-year-olds were considered at risk of an eating disorder, while 47.2% of 21-25-year-olds were considered at risk of an eating disorder. Further information on these relationships are reported in Table 7, Table 8 and Figure 3.

A correlation test revealed multiple relationships between the variables of BMI, perceived body image, ideal body image, body dissatisfaction, and EAT-26 score (chance of disordered eating). The strongest relationships occurred between perceived body image and body dissatisfaction ($r = .83, p < .01$) and perceived body image and BMI ($r = .54, p < .01$). Several variables were found to not have significant relationships, including BMI and EAT-26 score, and perceived body image and EAT-26 score. Additional results can be found in Table 9.

The ROC curves showed that BMI is a statistically significant predictor of an eating disorder risk in males but not in females. Additional results for the ROC curves for all participants, males, and females can be found in Table 10.

Discussion

This study is unique because it analyzed the eating disorder risk and body image dissatisfaction in both male and female Division I cheerleaders. The findings indicate that there are no significant differences between male and female cheerleaders when looking at eating disorder risk and body image dissatisfaction. However, variation occurs between genders in the proportions of eating disorder risk. Aesthetic sport eating disorder risk range from 24%-50% with gymnastics being the highest (Black et al., 2003; Greenleaf et al., 2009; Sundgot-Borgen &

Torstveit, 2004). Previous studies have seen that female cheerleaders are more similar to dancers, colors guard, and majorettes at 29.7% risk of disordered eating (Torres-McGehee et al., 2009). This study found that males were 43.2% at risk while females were 50% at risk of an eating disorder. This could suggest that cheerleading is closer to gymnastics in terms of eating disorder risk than previously thought. One possible reason for this elevation in disordered eating risk may be due to the fact that Division I programs get more media coverage than many other sports divisions, and thus the cheerleaders' media exposure would also be increased. National televised sporting events as well as the growing world of social media could be a factor in the high disordered eating rates for both male and female cheerleaders at the Division I level.

After looking at the results by gender, the next area of evaluation was to look into differences between class status as well as age groups. There were no significant differences when separating the sample into underclassmen and upperclassmen, except with the "Have you lost 20 pounds or more in 6 months?" behavior question. Of the 7 people that answered "yes" to this question, 5 of them were males. Men generally have more weight to lose, thus men answering "yes" to this question seems a logical result. Also, 6 of these participants were freshman or sophomores, suggesting that there may be an adjustment period to college-level expectations that results in higher weight-loss by these athletes. There were no significant differences when participants were analyzed by age groups (ages 18-20, versus ages 21-25).

Additionally, the Pearson correlation test found that calculated BMI holds a significant positive relationship with perceived body image, ideal body image, and body dissatisfaction score. This shows that BMI increases as the other three variables do. These findings are expected, as an increased BMI would likely result in a perceived body image that is also increased. This is also true for body dissatisfaction, if BMI increases then the participant would

be less satisfied with their current body image. Ideal body image also holds a positive relation with BMI. This suggests that as BMI increases, ideal body image increases as well. Although it wasn't tested for in this study, this could potentially be due to realistic changes a person hopes to make. For example, if a participant with a higher BMI chose image 7 on the SIL for perceived body image, then choosing image 1 on the SIL for ideal body size would not be realistic and they would choose a higher numbered silhouette. Thus, as BMI increases both perceived and ideal body image would increase. However, to account for an increased body dissatisfaction score with a higher BMI, the rates of both perceived body image and ideal body image would have to increase but at different intervals. Perceived body image would have to increase at a greater interval than ideal body image which accounts for the correlation with increased body dissatisfaction.

Perceived body image is also positively correlated to ideal body image and body image dissatisfaction. As perceived body image increases, the ideal body image score could also increase to realistically adjust for the inflated perceived score. Body image dissatisfaction could also increase due to the nature of self-reporting. Participants could inflate their perceived score if they have an eating disorder risk, and due to the realistic BMI adjustment, they could choose a slightly higher ideal body score.

Ideal body image was negatively correlated with body dissatisfaction score and the Eat-26 scores. As ideal body image scores increase, body dissatisfaction scores would decrease. This suggests that participants who chose a higher ideal body image score on the SIL scale are more satisfied with their body image than participants with lower ideal body image scores. Also, as ideal scores increase the Eat-26 scores would decrease. Following the same logic, higher

ideal body image scores suggest more satisfaction in body image so decreased scores for eating disorder risk makes sense.

Additionally, body image dissatisfaction was positively correlated to EAT-26 scores. Again, this follows the same pattern as a greater body image dissatisfaction score yielding a higher EAT-26 score. This suggests that a higher body image dissatisfaction score could potentially result in an increased rate of eating disorder risk.

The two female participants who were labeled as at-risk due to BMI were not included in the ROC curve calculations as they were considered outliers and would skew the data. The ROC curve for the total population revealed that if a participant has a BMI greater than 25.51 then the relative risk would be 1.79. This suggests that a participant with a BMI greater than 25.51 has a 1.79 greater risk of having an eating disorder risk than another participant. After finding the cutoff of 25.51, it was concluded that this number was elevated for the female population and thus a male and female ROC curve for BMI and eating disorder risk were analyzed. The female ROC curve found that there was no significant difference between BMI and eating disorder risk. However, the ROC curve for males revealed a high significance to BMI and eating disorder risk. The relative risk of 5.33 suggests that a male with BMI greater than 26.42 has a 5.33 greater risk to have an eating disorder than another male. Furthermore, a sensitivity of 0.88 suggests that a male with a BMI greater than 26.42 has an 88% chance of being positive for an eating disorder risk. A specificity score of 0.67 suggests that a male with a BMI under 26.42 has a 67% chance of being not at risk of an eating disorder. This is consistent with Forney and Ward's (2013) study that found that BMI is a good indicator of eating disorder risk in male cheerleaders.

Overall, the data suggests that male and female cheerleaders have an increased risk of eating disorders which is similar to other varsity sports such as gymnastics than maintain the highest level of risk. This increased risk can potentially stem from pressures from coach, parents, and peers as well as national television and social media exposure.

Limitations

Although this study found a high ratio of male and female cheerleaders for body image dissatisfaction, the following limitations should be taken into consideration. The first limitation includes the sample itself. With only 97 responses, which is an average of eight participants per each university that responded, and 12.3% universities responding to the survey, sample size and response rate for this study was relatively low. Additionally, the sample may be biased towards teams without a history of eating disorders. At least two universities did not feel comfortable sending the survey out to their respective teams as they did not want to trigger any relapses in athletes with a history of eating disorders or negative body perceptions. One school specifically stated that in the past, the girls who tried out for the cheer team would be given a rating based on appearance before a single skill was demonstrated. This school went on to say that the team still has girls who had “suicide scares and liposuction” as a result of how the program used to be run and are trying hard to move past this. It should be taken into consideration that some schools did not wish to participate as to not illicit past patterns or negative behaviors, and this could have altered the generalizability of the results of this study.

Second, the self-reporting of height, weight, and EAT-26 is a limitation. Studies with a self-reporting structure always require a trust factor that participants will be honest in their responses. These studies also need to consider that reported values could be inflated or deflated for a number of reasons. One possible reason in this study could be that if an individual truly has

an eating disorder, they could potentially inflate height and weight scores thus raising their BMI. Likewise, if an individual has an eating disorder but is in denial, they could potentially deflate their scores on the EAT-26 and thus not be labeled at risk. Also, because of the self-reported height and weight, actual BMI can be inaccurate simply due to inadequate knowledge. Using BMI alone should also be exercised with caution as it does not take into consideration what type of weight is measured (fat or muscle).

Third, the EAT-26 is not a diagnostic tool but a screening tool for eating disorder risk. Since diagnosed eating disorders were not tested for, it cannot be concluded that all cheerleaders who were at risk of an eating disorder actually have an eating disorder. This reflects the screening properties of the EAT-26 and that at-risk people should seek a medical professional for a definitive diagnosis of an eating disorder.

Finally, the BMI silhouettes were used to determine BMI dissatisfaction. The silhouettes are just a snapshot with correlated BMI's. These BMI's have uneven intervals and should be interpreted with caution. The BMI silhouettes are a beneficial way to get an inexpensive and quick glimpse into body satisfaction, but for more accurate results other means of testing should be considered.

Conclusion

Cheerleaders should be under more stringent rules just like normal varsity sports. With the high demand on performance and appearance from coaches, peers, nationally televised sporting events, and social media, the risk of unhealthy eating habits and weight loss methods could play a factor in the elevated risk of eating disorders and body image dissatisfaction. Currently, teams are only self-monitored by coaches and the university. Having cheerleading tied in with the NCAA could be beneficial in the monitoring of unhealthy weight loss/weight

gain methods. Since the NCAA does not classify cheerleading as a sport, there are no requirements to screen for eating disorders. In 2006, the NCAA and Varsity Brands, Inc, worked together to include cheerleading in the NCAA's Catastrophic Injury Insurance Program (NCAA, 2016). This program made it a requirement to have a certified safety-coach or advisor at practices and games but does not require any medical professionals to be present such as athletic trainers or physicians. With the increased risk of injuries and disordered eating, medical professionals should be available for cheerleading athletes in order to provide the necessary medical attention and detection of early signs and symptoms of an eating disorder.

In conclusion, the NCAA, Varsity Brands, Inc., universities, and coaches need to work together to provide the best medical care possible for cheerleading athletes. Stricter policies should be implemented on universities and coaches to help promote a healthier life style instead of body shaming. Also, holding cheerleaders to the same standards as varsity sports teams for weight control and banned substances can be a step in the right direction to ensure that cheerleaders are controlling or losing weight in a healthy manner. The NCAA needs to re-label cheerleading to either become an official sport or to include cheerleading in all policies and procedures as if it were a varsity sport. Essentially, the NCAA needs to adopt cheerleading into their policies since they face the same stressors as Division I varsity sports and to also take the sole self-regulation away from the universities and coaches. With these stricter guidelines, coaches would need to focus on their teams to make sure they are healthy and ensure that cheerleaders are not harming their bodies.

Even with the policies and procedures in place, eating disorder signs and symptoms and body dissatisfaction could still be missed unless there are proper medical personnel available for the team. Medical personnel, such as athletic trainers, should be available for cheerleading

teams and be able to refer the cheerleaders who are demonstrating signs and symptoms for an eating disorder to the proper prevention services. With an athletic trainer available and able to properly administer early detection for male and female cheerleaders with potential eating disorders, they will have the ability to then provide proper medical attention the athletes need and work towards lessening the presence of unhealthy habits.

Future Research

Future research should look into multiple facets that may play a role in cheerleader perceptions of body image. Some areas to include in further research include national television and social media exposure, and pressures from coaches and peers when examining eating disorder risk and body image. It is clear that these areas can affect cheerleader perceptions and eating habits, however more knowledge is needed in order to determine the significance of these relationships. Also, future research should look into longitudinal changes for collegiate cheerleaders throughout the academic year or throughout their tenure as a collegiate cheerleader.

Tables and Figures

Table 1: Self-Reported Physical Measurement

Self-reported physical measurements by gender

	Total (n = 97)	Males (n = 36)	Females (n = 60)	P Value
Height (meters)	1.7 ± 0.1	1.8 ± 0.05	1.6 ± 0.1	<0.001
Weight (kilograms)	68.3 ± 18.1	88.4 ± 11.7	55.9 ± 6.8	<0.001
Body Mass Index (kg/m ²)	24.0 ± 3.6	27.1 ± 3.0	22.1 ± 2.4	<0.001

Table 2: Anchor Means ± SD by Gender

Descriptive statistics for cheerleaders calculated BMI, Likert scale BMI and associated specific BMI anchors from the Gender-Specific BMI Figural Stimuli Silhouette Survey (1 = 18.3, 2 = 19.3, 3 = 20.9, 4 = 23.1, 5 = 26.2, 6 = 29.9, 7 = 34.3, 8 = 38.6, 9 = 45.4)

	Image Perception	Total	Males	Females
Body Mass Index (Self-reported)		24.0 ± 3.6	27.1 ± 3.0	22.1 ± 2.4
Body Mass Index (SIL Anchors)	Perceived	22.8 ± 2.7	23.5 ± 3.4	22.3 ± 2.1
	Ideal	20.5 ± 1.1	20.9 ± 1.0	22.2 ± 1.0
Likert scale	Perceived	3.7 ± 1.0	3.9 ± 1.2	3.6 ± 0.9
	Ideal	2.7 ± 0.6	3.0 ± 0.5	2.6 ± 0.6

Table 3: Independent T-Table by Gender

No significant differences between males and females.

	t	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
				Lower	Upper
Perceived – ideal (Body Dissatisfaction)	-.115	.909	-.027	-.496	.442
SUM of Eat-26	-.993	.323	-2.016	-6.048	2.017
Oral Control Items	1.160	.249	.506	-.360	1.372
Dieting Scale Items	-1.273	.206	-1.974	-5.054	1.106
Bulimia and Food Preoccupation Scale Items	-1.058	.293	-.548	-1.576	.480
Risk According to Eat-26	-.642	.522	-.068	-.276	.141
20 pounds or more lost in past 6 months	-1.653	.105	-.102	-.226	.022
Exercise Behavior	.423	.674	.165	-.615	.945
Laxative Behavior	-.936	.352	-.238	-.744	.267
Vomiting Behavior	-.655	.514	-.086	-.345	.174
Binge Behavior	-.162	.872	-.032	-.431	.366

Table 4: At Risk by Gender

Cross-tabulations for eating disorder risk (EAT-26) separated by gender

		Not at Risk	Risk	Total
Gender	Male	21	16	37
	Female	30	30	60
Total		51	46	97

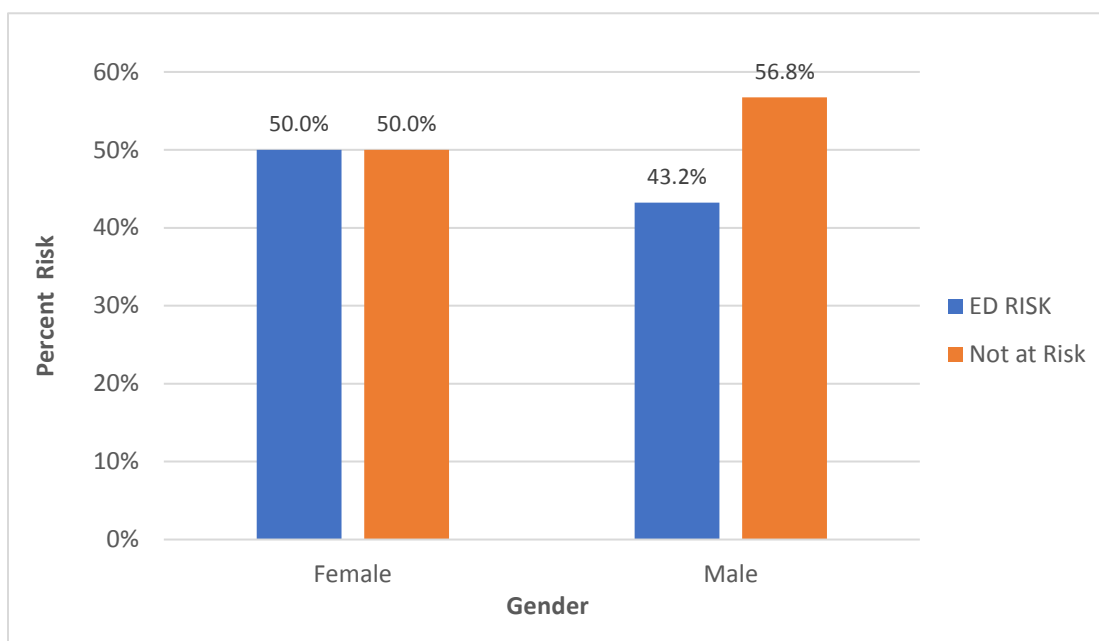


Figure 1: At Risk by Gender. Eating disorder risk (EAT-26 score) separated by gender

Table 5: Independent T-Table by Class

Independent t-table analyzing underclassmen and upperclassmen. No significant differences except with losing 20 or more pounds behavior question.

	t	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
				Lower	Upper
Perceived – ideal (Body Dissatisfaction)	1.449	.151	.309	-.114	.732
SUM of Eat-26	-.859	.393	-1.786	-5.917	2.344
Oral Control Items	-.582	.562	-.248	-1.094	.598
Dieting Scale Items	-.437	.663	-.701	-3.882	2.481
Bulimia and Food Preoccupation Scale Items	-1.696	.093	-.837	-1.819	.144
Risk According to Eat-26	-.116	.908	-.012	-.215	.192
20 pounds or more lost in past 6 months	-2.027	.047	-.108	-.214	-.001
Exercise Behavior	-1.147	.254	-.407	-1.111	.297
Laxative Behavior	.547	.586	.136	-.357	.628
Vomiting Behavior	-.748	.456	-.095	-.347	.157
Binge Behavior	-1.660	.101	-.314	-.691	.063

Table 6: At Risk by Class

Cross tabulation and associated bar graph for eating disorder risk separated by underclassmen and upperclassmen

		Not at Risk	Risk	Total
Under/Upper Classmen	Under	25	22	47
	Upper	26	24	50
Total		51	46	97

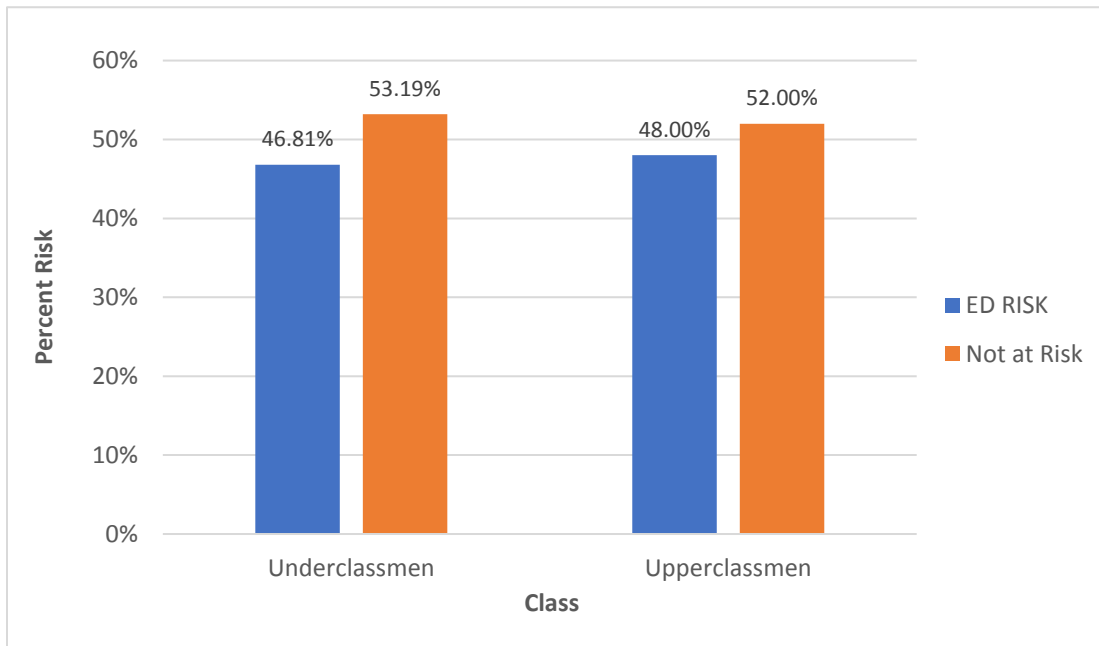


Figure 2: At Risk by Class. Eating disorder risk (EAT-26 score) separated by class

Table 7: Independent T-Table by Age

Independent t-table analyzing age groups. No significant differences between 18-20-year-olds and 21-25-year-olds.

	t	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
				Lower	Upper
Perceived – ideal (Body Dissatisfaction)	1.122	.265	.249	-.191	.689
SUM of Eat-26	.498	.620	1.074	-3.209	5.358
Oral Control Items	-.727	.469	-.320	-1.195	.555
Dieting Scale Items	.627	.532	1.038	-2.250	4.326
Bulimia and Food Preoccupation Scale Items	.627	.532	1.038	-2.250	4.326
Risk According to Eat-26	.030	.976	.003	-.207	.214
20 pounds or more lost in past 6 months	-1.488	.140	-.071	-.165	.024
Exercise Behavior	-.663	.509	-.245	-.976	.487
Laxative Behavior	.676	.500	.173	-.336	.683
Vomiting Behavior	-.732	.466	-.096	-.357	.164
Binge Behavior	-.845	.400	-.170	-.569	.229

Table 8: At Risk by Age

Cross tabulations for eating disorder risk (EAT-26 score) separated by age groups

		Not at Risk	Risk	Total
Age Group	18-20	32	29	61
	21-25	19	17	36
Total		51	46	97

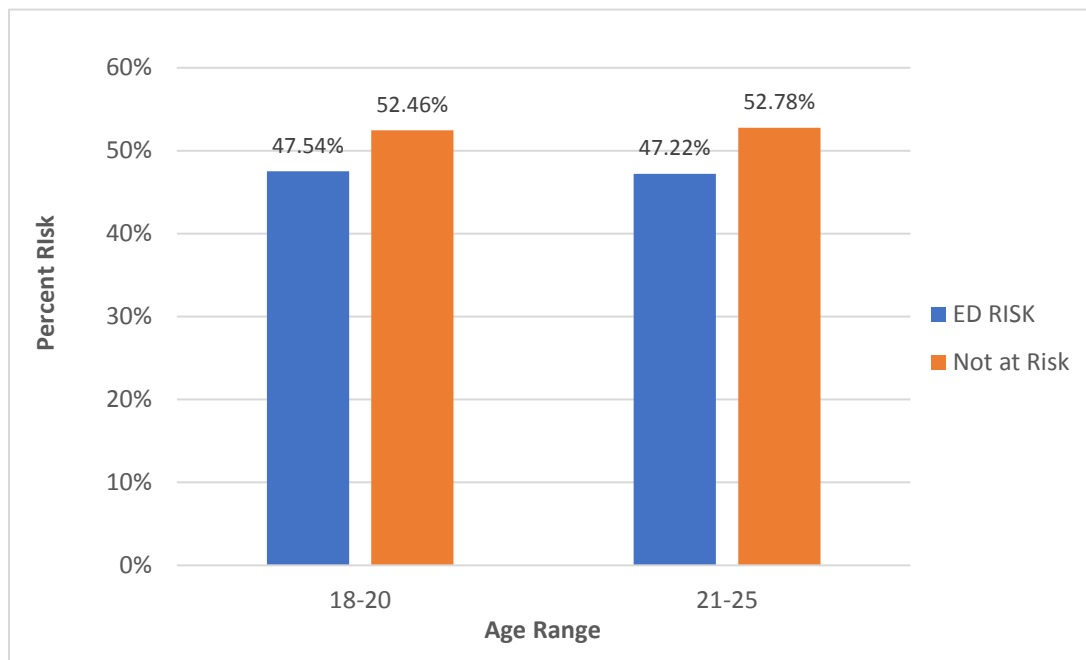


Figure 3: At Risk by Age – Eating disorder risk (EAT-26 score) separated by age groups

Table 9: Pearson Correlation Table

Correlation table analyzing calculated BMI, perceived body image, ideal body image, body dissatisfaction, and SUM of Eat-26.

	1	2	3	4	5
1. Calculated BMI Sig (2-tailed)	-				
2. Perceived Body Image Sig (2-tailed)	.541** .000	-			
3. Ideal Body Image Sig (2-tailed)	.287** .004	.224* .027	-		
4. Perceived-Ideal (Body Dissatisfaction) Sig (2-tailed)	.352** .000	.828** .000	-.362** .000	-	
5. SUM of EAT-26 Sig (2-tailed)	.107 .299	.193 .058	-.317** .002	.367** .000	-

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Table 10: ROC Curve Analysis

ROC Curves for whether or not BMI is a predictor for an eating disorder risk for the total sample, males and females.

	Total (n = 95)	Males (n = 36)	Females (n=58)
Research Question	Does BMI predict eating disorder risk?	Does BMI predict eating disorder risk in males?	Does BMI predict eating disorder risk in females?
Area Under the Curve	0.641	0.771	0.615
Cut-off point	25.51	26.42	22.77
P-Value	0.006	0.001	0.085
Sensitivity	0.46	0.88	0.46
Specificity	0.80	0.67	0.77
Relative Risk	1.79	5.33	1.65

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Appendices

A. Survey



Investigating disordered eating risk and body image dissatisfaction of Division I male and female cheerleaders

Principal Researcher: Christopher Blaszk
 Faculty Advisor: Dr. Stephen W. Dittmore

INVITATION TO PARTICIPATE

You are invited to participate in a research study about disordered eating risk and body image dissatisfaction of Division I male and female cheerleaders. You are asked to take this survey, and it will take 10 minutes to complete this survey.

The purpose of this study is to gain more awareness on the body perceptions of collegiate cheerleaders, and investigate if male cheerleaders suffer from similar levels of disordered eating and body image issues as compared to their female counterparts.

If you do not want to be in this study, you may refuse to participate. Also, you may refuse to participate at any time during the study. There will be no negative effect at all if you refuse to participate. There is no anticipated risk to participating and all information will be kept confidential to the extent allowed by applicable State and Federal law. At the conclusion of the study you will have the right to request feedback about the results and you have the right to contact the Principal Researcher as listed below for any concerns that you may have.

You may contact the Principal Researcher, Christopher Blaszk at cmblaszk@uark.edu, or the Faculty Advisor, Dr. Dittmore at dittmore@uark.edu, if you have any questions about this study. If you have concerns or questions about your rights as a research participant, please feel free to contact Ro Windwalker at the University of Arkansas Research Compliance Office, 479-575-2208 or irb@uark.edu.

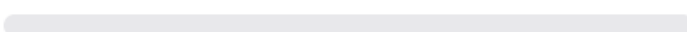
I wish to participate in this survey



I DO NOT wish to participate in this survey



0%



100%





What University do you attend?

What is your current class standing?

- Freshman
- Sophomore
- Junior
- Senior
- Above Senior

What is your gender?

What is your age?

HEIGHT (feet/inches)	HEIGHT (inches)	HEIGHT (cm)
4'8"	56	142.2
4'9"	57	144.8
4'10"	58	147.3
4'11"	59	149.9
5'0"	60	152.4
5'1"	61	154.9
5'2"	62	157.5
5'3"	63	160.0
5'4"	64	162.2
5'5"	65	165.1
5'6"	66	167.6
5'7"	67	170.2
5'8"	68	172.7
5'9"	69	175.3
5'10"	70	177.8
5'11"	71	180.3
6'0"	72	182.9
6'1"	73	185.4
6'2"	74	188.0
6'3"	75	190.5
6'4"	76	193.0
6'5"	77	195.6
6'6"	78	198.1

What is your current height in inches?

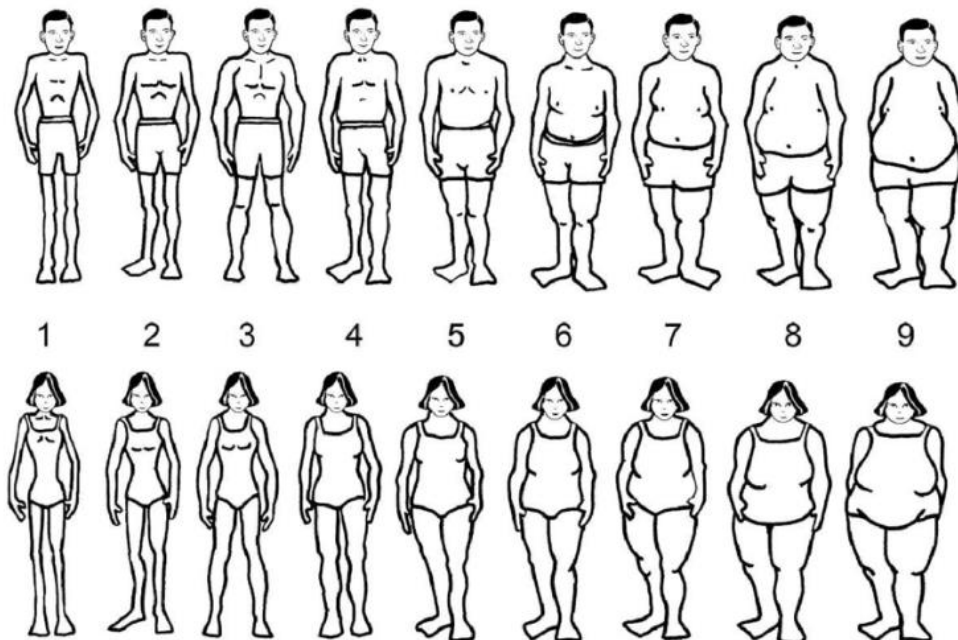
What is your current weight in pounds?

In the past 6 months have you:

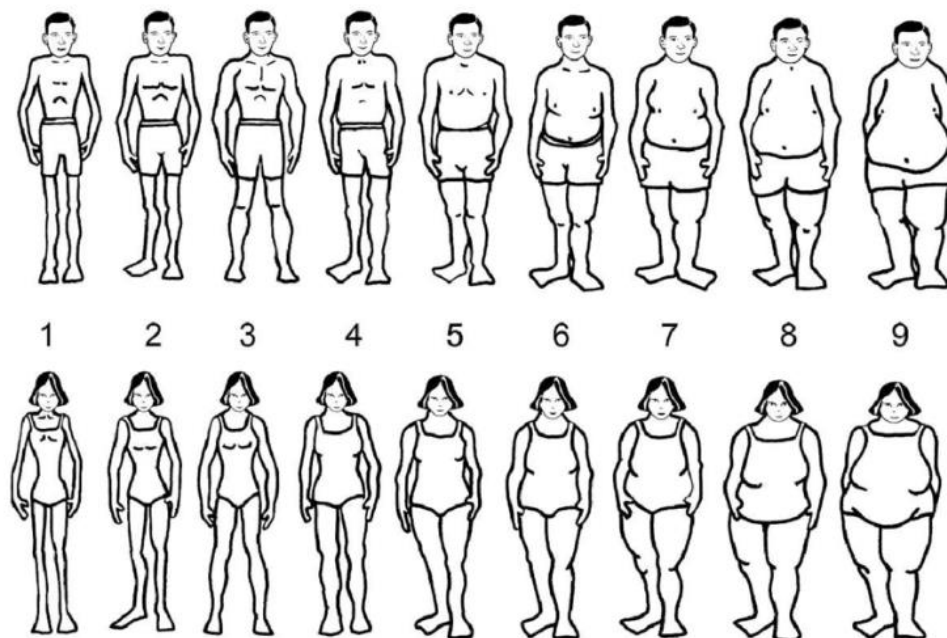
	Never	Once a month or less	2-3 times a month	Once a week	2-6 times a week	Once a day or more
Gone on eating binges where you feel that you may not be able to stop? (Defined as eating much more than most people would under the circumstances and feeling that eating is out of control)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ever made yourself sick (vomited) to control your weight or shape?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ever use laxatives, diet pills or diuretics (water pills) to control your weight or shape?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Exercised more than 60 minutes a day to lose or to control your weight?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Have you lost 20 pounds or more in the past 6 months?

- Yes
- No



From the figures above, please choose the figure that reflects how you think you CURRENTLY look.



From the figures above, please choose your IDEAL figure.

B. Research Compliance Protocol Letter



To: Christopher Mark Blaszk
BELL 4188

From: Douglas James Adams, Chair
IRB Committee

Date: 01/16/2018

Action: Exemption Granted

Action Date: 01/16/2018

Protocol #: 1712092523

Study Title: Disordered Eating and Body Image Dissatisfaction of Division I Male and Female Cheerleaders

The above-referenced protocol has been determined to be exempt.

If you wish to make any modifications in the approved protocol that may affect the level of risk to your participants, you must seek approval prior to implementing those changes. All modifications must provide sufficient detail to assess the impact of the change.

If you have any questions or need any assistance from the IRB, please contact the IRB Coordinator at 109 MLKG Building, 5-2208, or irb@uark.edu.

cc: Stephen W Dittmore, Key Personnel