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Gender and Racial Differences in Emotional Eating, Food Addiction Symptoms, and Body Weight Satisfaction among Undergraduates

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Abstract

Research is sparse regarding gender and racial differences in food addiction symptoms and the influence of emotions and social situations on overeating. This study examined undergraduates' internal and external triggers on the decision to overeat and also food dependence scores using the Yale Food Addiction Scale. A paper-pencil survey was distributed to a convenience sample of 301 undergraduates. Participants (n = 284) were mostly female (70.42%) and race was reported as White (77.82%) and African American (22.18%). The General Linear Model Analysis of Variance was used to adjust for gender, race, and Body Mass Index [BMI]. For total food addiction symptom scores, significant differences were found by race with African Americans having higher scores (i.e.: more food dependence) (M = 2.36) than Whites (M = 1.90, $p < .05$). Gender was significant for body size satisfaction as females reported less satisfaction (M = 2.40) than males (M = -.097, $p < .001$). Females were more likely to report depression (Male: M =1.36; Female: M = 1.75, $p < .05$), stress (Male: M = 1.59, Female: M = 2.18, $p < .001$) and anxiety (Male: M = 1.40; Female: M = 1.75, $p < .05$) influenced overeating compared to males. Understanding gender, racial, social, and emotional cues that influence overeating may play an important role in the prevention and treatment of excessive food consumption.

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Introduction

In the United States more than one third of adults are obese, with the highest rates seen among Non-Hispanic blacks[1]. Socioeconomic status is one of several factors influencing the obesity epidemic in our nation[2]. There are distinct wealth inequalities among White and African American neighborhoods in the United States. African Americans have $1.00 in wealth for every $6.00 that Whites do. Income is also lower for African Americans who earn $1.00 for every $2.00 that Whites earn[3]. Although access to physical activity and education both factor into healthier eating and higher rates of obesity, we also know that persons with lower incomes often choose calorie dense foods of low nutritional value because these are often less expensive than healthy foods[4]. African American neighborhoods also have greater marketing for low nutrition foods and beverages than White neighborhoods[5]. Furthermore, only 4.5% African American youths reported eating vegetables the week prior compared to 11.3% of Whites[6]. Skipping breakfast has been found to influence academic success and contribute toward weight gain and less healthy eating patterns. The 2013 Youth Risk Behavior Surveillance report found that African Americans are more likely to skip breakfast (16%) as compared to Whites (11.5%)[6]. These inequities can contribute to the higher rates of obesity and rates of chronic disease that are found among African Americans.

The overconsumption of food also differs by gender. While women are more likely than men to report out of control and excessive eating, men are more likely to report overeating. There is a weak but significant difference by gender in meeting the diagnostic criteria for binge eating with rates for women being higher than men[7]. Females have a 3.5 % lifetime prevalence of developing binge eating disorder compared to 2.0 % for males[8].

Researchers are now suggesting that excessive consumption of food which may lead to weight gain could be characterized as an addiction. Certain foods, especially those high in sugar, salt and fat, have shown higher addictive qualities than others[9,10]. Neural activation which occurs in addictive-type eating behavior is similar to that of substance dependence[11]. The main similarity

between the two involves the neurotransmitter dopamine, which is associated with pleasure or reward. Greater amounts of dopamine are released when individuals consume foods that are considered to be more rewarding, which are often those higher in sugar, fat and salt[12]. Researchers recently reported the first support for food addiction based on actual food intake and provided additional support for a food addiction construct[13].

Gearhardt and colleagues[8] developed the Yale Food Addiction Scale [YFAS] for studies on food addiction. The YFAS uses a combination of questions from various behavioral addiction scales, along with the criteria listed for substance dependence in the Diagnostic and Statistical Manual IV-TR where the questions are transformed to relate to an individual's eating habits. The scale was reviewed by experts in the fields of addiction, obesity and eating pathology and then was administered to students attending a private college as a section in a larger health survey. Preliminary analysis of reliability and validity of the YFAS found it to be accurate in identifying food addiction qualities among individuals[8]. The data can be measured as symptoms for food addiction or as a diagnosis according to the DSM IV-TR[14].

While biology may explain why an individual overeats past healthy portions, it does not explain what initiates the eating. Emotional eating, or eating to cope with a negative emotion, has been linked as a common trigger initiating these periods of overeating. Emotional overeating is seen more often in females than in males; perhaps a result of the greater intensity of expressed emotions by females[10,15]. Females also report higher levels of body size dissatisfaction than males, which is reflected as social physique anxiety, stemming from commonly accepted social norms. It is believed the desire to be thin even further increases the stress experienced by females[16]. Social physique anxiety and body size dissatisfaction are often accompanied by social anxiety and stress, all of which Ostrovsky and colleagues found to positively correlate with emotional overeating[17]. As the severity of anxiety increases, the frequency of eating binges may also increase, resulting in weight gain and increasing body size dissatisfaction, adding to the existing anxiety[17,18].

Obese individuals suffering from binge eating disorder as well as obese individuals without this disorder have a tendency to turn to emotional eating when trying to cope with depression, low self-esteem, stress and other negative emotions[19]. Researchers suggest that obese individuals choose overeating as their coping mechanism because they do not know alternative ways to ease their emotional state. Overwhelming situations differ between individuals but research shows that it is a trigger for overeating.

Social situations can also cause stress, anxiety and other distractions, influencing an individual's decision to overeat. Food intake is usually greater when eating among friends than when eating alone[21]. This could be caused by several different reasons. Eating in the presence of friends may increase the length of the mealtime compared to if one is eating a meal alone. Or, the socialization between two or more may be a distraction from satiety cues and how much food is actually consumed[21]. The same reasoning of distraction applies to why individuals are more likely to overeat while watching television. It has been reported that viewing a television program while eating shifts the attention of the individual away from how much he or she is actually consuming. Researchers conducting studies in this area have found that participants who watched television consequently had larger than normal meal intakes[22].

Obesity rates have risen in America, triggering efforts to prevent obesity and assist in weight loss. Unfortunately, many of these preventative measures and weight loss programs have not reduced rates of obesity. Emotional and social triggers of overeating and food addiction require more research in order to implement successful efforts to end the rise of obesity rates. The aim of this study was to examine food addiction symptoms and the influence of race and gender on internal and external factors which may influence the decision to overeat among a college-age population.

Methods

Participants

The sample consisted of undergraduates attending a Southeastern coastal university in March of 2014. A paper-pencil survey entitled Nutrition and Physical Activity Survey was administered to a convenience sample of 301 undergraduates who were recruited through requests made by the primary researcher for administration in college classes. A paragraph preceding the survey explained its purpose, that participation was voluntary, and that all information would remain anonymous. Approval for this study was granted by the university's Institutional Review Board prior to data collection. Participants took about 7-10 minutes to complete the survey.

Demographic information Age, height, weight, race and gender were self-reported. Most participants were either White or African American; therefore, only those in these two racial categories were included when analyzing results. Body Mass Index (BMI) was calculated from the self-reported height and weight measures provided by participants. BMI, a function of weight adjusted for height, is one of the most commonly used methods of weight categorization[23]. Although studies have shown that BMI is correlated with body fat, it is a measure of excess weight which may be fat or muscle[23].

Measurements

Body size (current and desired BMI) and body weight satisfaction. In addition to being asked their height and weight to calculate BMI, participants were also asked their ideal weight. From the desired body weight values reported, body weight satisfaction measures (desired – current BMI) were also calculated.

Overall food dependence symptom scores and dependency diagnosis. The YFAS was included to determine food dependency and symptoms of food dependency[9].

The YFAS was scored in two different ways in this study, as was provided by scoring instructions from the authors. In order to determine overall food addiction symptom scores (without diagnosis), all items from the YFAS were first scored as a continuous version of the scales for each criterion (e.g.: Loss of Control, Tolerance, Withdrawal, etc.). Next, the YFAS was scored in a dichotomous method to determine those who had the highest markers of consuming high fat/sugar foods in ways similar to substance dependence (0 = no diagnosis; 1 = diagnosis).

External triggers on the decision to overeat. Participants were provided four different external factors (advertising

on television, eating with others, eating while distracted and social occasions) and were asked to "Rate the influence of these factors on your decision to overeat" on a scale of 1 to 5 (1= no influence; 5 = high influence).

Internal and emotional triggers on the decision to over eat. Participants were also provided three internal or emotional-related factors on the decision to overeat (depression, anxiety, and stress) and were asked to "Rate the influence of these factors on your decision to overeat" on a scale of 1 to 5 (1 = no influence; 5 = high influence).

Data Analysis

T-tests were used to examine differences in participants' ages by gender and race. Chi Square tests were conducted to determine categorical differences in race (White or African American) by gender. Chi Square tests were also used to determine gender and racial differences in meeting diagnostic criteria for substance dependence with the consumption of high fat/sugar foods (0 = no diagnosis; 1= diagnosis).

The General Linear Model [GLM] Analysis of Variance was used to examine current and desired BMI and body weight satisfaction (dependent variables) by the categorical independent variables of race (African American or White) and gender. Next, GLM was used again to examine overall food dependence symptom scores and the various external, internal, and emotional triggers on the decision to overeat (dependent variables) by the categorical independent variables of race (African American or White) and gender while BMI was also used as a covariate. The model was first run with interaction terms and if these were significant the alpha value was adjusted using the Bonferroni method to adjust for type I errors (p = .05 / number of comparisons). If these were not significant they were removed and the model was re-analyzed. A probability value of < .05 was used for all testing to determine statistical significance.

Results

Participants

Surveys were completed by 301 undergraduates (73.4% White, 20.9% African American, 5.6% other race) at a Southeastern coastal university. To allow for comparisons by race, those in the other category (n = 17) were removed, leaving a sample size of 284 (70.4% White, 29.6% African American) whose average age was 20.25 years (SD = 3.39). T-tests revealed no significant differences in age by race; however, significant differences were found in age by gender as females (M = 20.49 years) were significantly older than males (M = 19.79 years, p < .05). A Chi Square test revealed significant differences between categories of race by gender [X^2 (1, n = 284) = 6.85, p < .05] (see Table 1).

Table 1: Demographic information by gender (N = 284).

Characteristic	Male (n = 84)		Female (n = 200)	
	Mean Age	SD	Mean Age	SD
Age*	19.79 years	2.07	20.49 years	3.98
Race**	N	%	N	%
African American	27	32.14%	36	18.0%
White	57	67.86%	164	82.0%

*p < .05 , **[X^2 (1, n = 284) = 6.85, p < .05]

Current BMI, desired BMI, and body weight satisfaction (desired – current BMI). When using the GLM Analysis of Variance to examine dependent variables related to current BMI, no significant interactions were found by race and gender so these interactions were dropped and the model was run a second time. When these interactions were dropped, the only differences found were by race (African American: M = 26.69; White: M = 23.74, p < .0001) (See Table 2). For desired BMI there were both gender (Female: M = 22.84; Male: 25.83, p < .0001) and racial differences found (African American: M = 25.81; White: M = 22.86, p < .0001) with males and African Americans wishing to be larger in size than females and Whites. Only gender differences were found for body weight satisfaction (desired BMI - current) with females wanting to be smaller in size (M = -0.097) and males reporting the desire to be larger in size (M = 2.41, p < .0001).

Table 2: Current and body mass index (BMI), body weight satisfaction and overall food dependence scores by race and gender (n = 284).

CHARACTERISTIC	p-value	M	SD
Current BMI			
GENDER	p = .1809		
Male		25.63	4.79
Female		24.80	5.68
RACE	p < .0001		
African American		26.69	4.71
White		23.74	5.21
Desired BMI			
GENDER	p < .0001		
Male		25.83	3.83
Female		22.84	4.64
RACE	p < .0001		
African American		25.81	3.88
White		22.86	4.12
Body weight satisfaction (Current - desired BMI)			
GENDER	p < .0001		
Male		-0.097	3.33
Female		2.40	4.05
RACE	p = .3213		
African American		1.39	3.38
White		0.911	3.59
Food addiction overall mean scores			
GENDER	p = .1077		
Male		1.99	1.38
Female		2.28	1.62
RACE	p < .05		
African American		2.36	1.33
White		1.90	1.52

Overall food dependence symptom scores and dependency diagnosis. In order to determine the overall food addiction symptom scores (without diagnosis), items from the YFAS were first scored as a continuous version of the total of the scales for

each criterion (e.g.: Loss of Control, Tolerance, Withdrawal, etc.). These scores ranged from 0 to 7 (0 symptoms to 7 symptoms). When using the GLM Analysis of Variance to examine these by race, gender, and BMI no significant interactions were found so these were dropped and the model was run a second time. BMI was not significant and did not affect findings; therefore, the model was run a third time only by race and gender. No differences were found by gender for means of food addiction symptom scores; however, significant differences were found by race with African Americans reporting higher mean scores (greater tendency toward possible food dependence) ($M = 2.36$) than Whites ($M = 1.90$, $p < .05$).

When using the diagnostic version scoring for the YFAS to determine those most likely to be using high fat/sugar foods in a way similar to substance abuse, scores were tabulated to determine either 0 (no diagnosis) or 1 (diagnosis). Fisher's exact tests revealed no significant differences by gender or race. Overall, 4.9% of participants scored as having "highest markers for high sugar/fat foods influencing them in a way similar to substance abuse" (% by Gender: male- 4.40%; female- 5.12%: % by Race: African America - 4.85%; White – 4.61%).

External triggers on the decision to overeat. Next, in order to determine gender, racial or BMI differences in participants' ratings of the influence of various external factors on overeating, GLM Analysis of Variance was used to examine numerous dependent variables: advertising on television, eating while distracted [e.g.: watching TV or surfing internet], social occasions, and eating with others. No significant interactions were found by race and gender so these were dropped. When the model was run a second time, no differences were found by BMI so this was removed from the model as well. It was run a third time with race and gender as independent variables (see Table 3).

Table 3: Ratings of the influence of various external factors on overeating by race and gender (N = 284).

CHARACTERISTIC	p-value	M	SD
Advertising on television			
GENDER	p = .3311		
Male		2.23	1.30
Female		2.40	1.52
RACE	p = .1053		
African American		2.46	1.27
White		2.16	1.41
Eating while distracted (watching TV, internet, etc.)			
GENDER	p = .0552		
Male		2.37	1.41
Female		2.72	1.65
RACE	p = .9904		
African American		2.55	1.37
White		2.54	1.53
Social occasions			
GENDER	p = .5786		
Male		2.58	1.35
Female		2.68	1.57
RACE	p = .1706		
African American		2.50	1.31
White		2.76	14.6
Eating with others			
GENDER	p = .0947		
Male		2.51	1.39
Female		2.21	1.54
RACE	p = .5640		
African American		2.31	1.34
White		2.42	1.51

Emotional triggers on the decision to overeat. The GLM Analysis of Variance was again used to determine racial or gender differences in ratings. Once again, no significant differences for race by gender interactions were found. The second model revealed no significant differences by BMI so this covariate was dropped as well. The third model revealed several significant differences by gender with females reporting higher ratings for several emotional factors affecting overeating than males. Females were likely to report that depression ($p = .0106$), anxiety ($p = .0268$), and stress ($p = .0007$) influenced overeating more than males (see Table 4).

Table 4: Ratings of influence of various emotional factors on overeating by race and gender (N = 284)

CHARACTERISTIC	p-value	M	SD
Depression			
GENDER	p < .05		
Male		1.36	1.17
Female		1.75	1.36
RACE	p = .9462		
African American		1.56	1.14
White		1.55	1.27
Anxiety			
GENDER	p < .05		
Male		1.40	1.22
Female		1.75	1.42
RACE	p = .6013		
African American		1.53	1.17
White		1.62	1.32
Stress			
GENDER	p < .001		
Male		1.59	1.32
Female		2.18	1.55
RACE	p = .6762		
African American		1.85	1.30
White		1.93	1.43
Eating alone			
GENDER	p = .0659		
Male		1.59	1.33
Female		1.91	1.54
RACE	p = .7216		
African American		1.79	1.29
White		1.72	1.43

Discussion

This study provided several interesting findings that contribute to the body of research related to emotional eating and over consumption of food. Although there were no differences by gender or race in the cutoff score for food addiction (0 = no diagnosis; 1 = diagnosis), it is important to note that 4.9% scored high enough to be placed in the category of possible "food addiction". This is a comparable percentage to that found by Flint and colleagues[24] of 134,175 adult women where 5.8% met the criteria for food addiction. One important difference between the two studies was the fact that the present study was of male and female undergraduates and the Flint study was of middle-aged women.

Similar to an earlier study where researchers found no significant correlation between YFAS scores and BMI[14], ours found the same; however, Flint and colleagues[24] did find that YFAS scores were significantly correlated with BMI among middle-aged women. It has been hypothesized that those exhibiting addictive-like qualities toward food may also have these tendencies with exercise or dietary restriction; thus, not all persons with food addiction are overweight or have higher BMI. When overall scores of food dependency symptoms were examined by race and gender, only racial differences were found with African Americans having significantly higher food dependency overall scores than Whites. According to statistics from the Office of Minority Health, African Americans are 1.5 times more likely to be obese compared to non-Hispanic Whites[25]. Future studies might further examine racial differences in food dependency scores to determine if they also may influence rates of overweight.

Although racial differences were not found for external or internal/emotional influences on the desire to overeat, gender differences were noted. Females were significantly more likely to report their eating behavior being affected by certain emotions than males. It has previously been reported ….."Females report more intense negative emotions than males"[15] (p237). Davis et al. found there are gender differences in how men and women respond to the same emotion evoking stimuli as well as different methods of coping. The findings from this study are worth further study to determine if undergraduate women are more likely to use food as a method of coping with emotions than men are. If so, how these coping methods might be mediated[15] should be studied further.

Among the gender differences for internal/emotional influences on the desire to overeat, depression was more likely to influence females' decisions to overeat compared to males. Depression is common in addictive behavior; this supports previous experiments that found people with food addiction and co morbid binge eating disorder were struggling with depression and negative feelings[14]. Other researchers have reported that depression and eating problems are significantly associated with emotional overeating among those with binge eating disorder who are overweight[26]; furthermore, females are more likely to suffer from depression than males[27]. Researchers have examined many different factors to try to determine reasons for this increased risk. This increased risk is likely multi-factorial: genetic, psychological, social reasons, hormonal, chemical, and or environmental factors possibly increasing females' risk for depression[27].

Anxiety was more likely to influence the decision to overeat among females than males. Women have also been found to be more sensitive to emotional stimuli and it is speculated that this may have biological basis based on evolutionary pressures[28]. Gardener and colleagues provided innovative research using Neuro scan Stim software with electrodes to determine gender differences in emotional reactions after viewing negative images. They reported that women show greater early emotional reactivity than men and this could predispose them to greater anxiety[28]. Research studies such as these are important to better understand why females are more vulnerable to anxiety disorders than males. Coping with anxiety through overeating is a negative strategy which may be mediated with cognitive behavioral skills.

Finally, stress influenced females' decision to overeat more often than among males. This could be due to the belief that stress and anxiety are closely related emotions. In order to deal with these feelings, like those suffering from depression, food can used as a coping mechanism. Mussap[16] previously reported that different symptoms of disordered eating were related to stress levels of females. Overeating may be one method of

alleviating these negative feelings in the short-term, but likely causes more long term emotional stress. Previous research suggests that a multiple week cognitive-behavioral intervention can reduce body weight concerns and reduce eating disorder risk for a few years among high-risk college women[29]. With this in mind, prevention efforts for emotional and stress eating might need to be implemented at the college level.

It is important to note that the findings of this study must also be considered within the context of limitations. The study addresses a cross-sectional group of undergraduate students from a Southeastern coastal university and may not be generalizable to a larger population. Those older than the traditional college age may have learned other ways of coping with emotional stressors rather than turning to overeating. Despite these limitations, the results provided adequate information for the purpose of this study.

Conclusion

In conclusion, this study found distinct gender differences in social and emotional influences on the decision to overeat. Females were more likely to turn to food to cope with these stressors than males. African Americans had higher food dependence scores than Whites. These are key findings because understanding gender, racial, social, and emotional cues that influence overeating may play an important role in prevention and treatment of excessive food consumption.

References

1. Ogden, C.L., Carroll, M.D., Kit, B.K., et al. Prevalence of obesity in the United States, 2009-2010. (2012) National Center for Health Statistics.
2. Black, J.L., Macinko, J. Neighborhoods and obesity. (2008) Nut Rev 66(1): 2-20.
3. M.c., Kernan, S., Ratcliffe, C., Steuerle, E., et al. Less than equal: Racial disparities in wealth accumulation. (2013).
4. Trust for America's Health. F as in fat: How obesity threatens America's future. (2013).
5. Harris, J.L. Fast food facts: Evaluating fast food nutrition and marketing to youth. (2010) Rudd Center for Food Policy and Obesity.
6. Centers for Disease Control and Prevention. Youth Risk Behavior Surveillance – United States. (2014) MMWR 63(SS04): 1-168.
7. Striegel-Moore, R.H., Rosselli, F., Perrin, N., et al. Gender differences in the prevalence of eating disorder symptoms. (2009) Int J Eat Disord 42(5): 471-474.
8. National Institutes of Mental Health. Eating disorders among adults – Binge Eating Disorder. (2015).
9. Gearhardt, A.N., Corbin, W.R., Brownell, K.D. Preliminary validation of the Yale Food Addiction Scale. (2008) Appetite 52: 430-436.
10. Kemp, E., Bui, M., Grier, S. Eating their feelings: Examining emotional eating in at-risk groups in the United States. (2011) J Cons Pol 34: 211-229.
11. Gearhardt, A.N., Yokum, S., Orr, P.T., et al. Neural correlates of food addiction. (2011) Arch Gen Psychol 68(8): 808-816.
12. Volkow, N.D., Wang, G.J., Fowler, J.S., et al. "Nonhedonic" food motivation in humans involves dopamine in the dorsal striatum and methylphenidate amplifies this effect. (2002) Synapse 44(3): 175-180.
13. Davis, C., Levitan, R.D., Kaplan, A.S., et al. Food cravings, appetite and snack-food consumption in response to a psychomotor stimulant drug: The moderating effect of "food-addiction". (2014) Front Psychol 5: 403.
14. Gearhardt, A.N., White, M.A., Masheb, R.M., et al. An examination of the food addiction construct in obese patients with binge eating disorder. (2012) Int J Eat Disord 45(5): 657-663.
15. Davis, E., Greenberger, E., Charles, S., et al. Emotion experience and regulation in China and the United States: How do culture and gender shape emotion responding? (2012) Int J Psychol 47(3): 230-239.
16. Mussap, A.J. Short communication: The relationship between feminine gender role stress and disordered eating symptomatology in women. (2007) Stress Health 23(5): 343-348.
17. Ostrovsky, N.W., Swencionis, C., Wylie, R.J., et al. Social anxiety and disordered overeating: An association among overweight and obese individuals. (2013) Eat Behav 14(2): 145-148.
18. Macht, M., Gerer, J., Ellgring, H. Emotions in overweight and normal-weight women immediately after eating foods differing in energy. (2003) Physiol Behav 80(2-3): 367-374.
19. Ricca, V., Castellini, G., Sauro, C.L., et al. Correlations between binge eating and emotional eating in a sample of overweight subjects. (2009) Appetite 53(3): 418-421.
20. Gianini, L.M., White, M.A., Masheb, R.M. Eating pathology, emotion regulation, and emotional overeating in obese adults with binge eating disorder. (2013) Eat Behav 14(3): 309-313.
21. Hetherington, M.M., Anderson, A.S., Norton, G.N., et al. Situational effects on meal intake: A comparison of eating alone and eating with others. (2006) Physiol Behav 88(4-5): 498-505.
22. Bellisle, F., Dalix, A.M., Slama, G. Non food-related environmental stimuli induce increased meal intake in healthy women: Comparison of television viewing versus listening to a recorded story in laboratory settings. (2004) Appetite 43(2): 175-180.
23. Centers for Disease Control and Prevention. Body Mass Index: Considerations for practitioners.
24. Flint, A.J., Gearhardt, A.N., Corbin, W.R., et al. Food-addiction scale measurement in 2 cohorts of middle-aged and older women. (2014) Am J Clin Nut 99(3): 578-586.
25. Office of Minority Health. (2013) Obesity and African Americans.
26. Masheb, R.M., Grilo, C.M. Emotional overeating and its associations with eating disorder psychopathology among overweight patients with Binge Eating Disorder. (2006) Int J Eat Disord 39(2): 141–146.
27. National Institutes of Mental Health. Depression in women.
28. Gardener, E., Carr, A.R., MacGregor, A., et al. Sex differences and emotion regulation: An event-related potential study. (2013) PLoS One 8(10): e73435.
29. Taylor, .C.B., Bryson, S., Luce, K., et al. Prevention of eating disorders in at risk college-age women. (2006) Arch Gen Psychol 63(8): 881-888.

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