Eating Behaviors 13 (2012) 174–178

Contents lists available at SciVerse ScienceDirect

Eating Behaviors

Loss of control eating in African-American and Caucasian youth ☆

Omni L. Cassidy [a,b], Brittany Matheson [a,b], Robyn Osborn [a], Anna Vannucci [a], Merel Kozlosky [c], Lauren B. Shomaker [a,b], Susan Z. Yanovski [b,d], Marian Tanofsky-Kraff [a,b,*]

[a] Uniformed Services University of the Health Sciences (USUHS), Department of Medical and Clinical Psychology, Bethesda, MD, 20814, USA
[b] Section on Growth and Obesity, Program in Developmental Endocrinology and Genetics, Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD), National Institutes of Health (NIH), DHHS, Bethesda, MD, 20814, USA
[c] Nutrition Department, Clinical Center, NIH, Bethesda, MD, 20814, USA
[d] Division of Digestive Diseases and Nutrition, National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), NIH, DHHS, Bethesda, MD, 20814, USA

ARTICLE INFO

Article history:
Received 9 September 2011
Received in revised form 16 December 2011
Accepted 10 January 2012
Available online 16 January 2012

Keywords:
African-American
Loss of control eating
Child
Adolescent
Energy intake
Obesity

ABSTRACT

Loss of control (LOC) eating, a disinhibited eating behavior shown to predict excessive weight gain in youth, has been reported by African-American children and adolescents. Yet, little is known about how LOC-eating manifests in this population. To investigate potential racial differences in LOC-eating, the Eating Disorder Examination was administered to 185 non-Hispanic African-American and Caucasian youth ages 8–17 y. Objective eating was assessed at two test meals during which youth ate *ad libitum* from a multi-item lunchtime food array. African-American and Caucasian youth reported a similar prevalence of LOC episodes (24.2% vs. 28.9%, $p = .75$). Yet, accounting for sex, age, fat-free mass, percent fat mass, height, and socioeconomic status, African-Americans consumed more total energy at both laboratory meals (1608 ± 57 kcal vs. 1362 ± 44 kcal; $p < .001$). Furthermore, African-American youth reporting LOC consumed the most total energy across both meals (1855 ± 104 kcal) compared to African-Americans without LOC (1524 ± 60 kcal), Caucasians with LOC (1278 ± 68 kcal), and Caucasians without LOC (1399 ± 46 kcal; $p < .001$). Future research is required to examine whether LOC-eating contributes to the high rates of obesity in African-American youth.

1. Introduction

Childhood obesity rates have increased dramatically among African-American youth (Ogden, Carroll, Curtin, Lamb, & Flegal, 2010; Ogden, Carroll, & Flegal, 2008). Thirty-six percent of African-Americans (2-19y) are currently overweight or obese compared to 32% of Caucasian youth (CDC, 2000; Ogden et al., 2010). Although these percentages do not statistically differ, they are clinically relevant as African-Americans remain at a higher risk for serious obesity-related health comorbidities (Brancati, Kao, Folsom, Watson, & Szklo, 2000; Sriwattanakomen et al., 2010). Given the weight and health disparities among African-Americans, it is critical to elucidate modifiable, behavioral risk-factors that may contribute to excess weight gain in this vulnerable population.

One such risk-factor may be loss of control (LOC) eating, which refers to the perceived experience of being unable to control what or how much is eaten, regardless of the reported amount of food consumed (Tanofsky-Kraff, 2008). By definition, LOC encompasses both classic episodes of binge-eating (i.e., large amounts of food consumed with LOC) and subjective binge-eating episodes (i.e., perceived, but not objective, overeating with LOC) (Tanofsky-Kraff, 2008). Rates of pediatric LOC range from 6 to 40% (Tanofsky-Kraff, 2008). Racial differences in prevalence are mixed with some studies reporting, relative to Caucasian youth, more (Swanson, Crow, Le Grange, Swendsen, & Merikangas, 2011), less (Story, French, Resnick, & Blum, 1995), or similar (Austin et al., 2008; Glasofer et al., 2007; Pernick et al., 2006; Shaw, Ramirez, Trost, Randall, & Stice, 2004) rates of LOC/binge-eating in African-American youth. LOC-eating is associated with excess weight (Tanofsky-Kraff, 2008). Even infrequent reports of LOC-eating among youth prospectively predict excessive weight gain (Tanofsky-Kraff et al., 2009) and the development of exacerbated disordered eating and psychological distress (Tanofsky-Kraff et al., 2011). While there are several proposed theoretical models of binge-eating, (Heatherton & Baumeister, 1991; Polivy & Herman, 1985; Stice, 2001) data (Brown, Shear, Schulberg, & Madonia, 1999; Chui, Safer, Bryson, Agras, & Wilson, 2007; Wilson, Wilfley, Agras, & Bryson, 2010) suggest that the interpersonal model of LOC (Tanofsky-Kraff et al., 2007) may be most suitable when describing such behaviors in minority groups. The model posits that interpersonal problems lead to negative affect, which precipitates LOC-eating and ultimately exacerbated disordered eating and excess weight gain. Given that interpersonal familial connectivity is highly valued in racial and ethnic minorities (Hill, 1999), it is

☆ Research support: Intramural Research Program, NIH, grant 1ZIAHD000641 from the NICHD with supplemental funding from NIMHD (to Jack A. Yanovski). ClinicalTrials.gov ID: NCT00320177.

* Corresponding author at: Uniformed Services University of the Health Sciences, Department of Medical and Clinical Psychology 4301 Jones Bridge Road, Bethesda, MD, 20814, USA. Tel.: +1 301 295 1482; fax: +1 301 295 3034.
E-mail address: mtanofsky@usuhs.edu (M. Tanofsky-Kraff).

1471-0153/$ – see front matter © 2012 Elsevier Ltd. All rights reserved.
doi:10.1016/j.eatbeh.2012.01.003

likely that difficult interpersonal relationships may cause particular distress that leads to LOC-eating.

Youth with LOC-eating self-report and exhibit specific eating patterns that may illuminate the impact of LOC on weight. Compared to those without LOC, youth endorsing LOC consume more total energy (Hilbert, Tuschen-Caffier, & Czaja, 2010; Mirch et al., 2006), fat (Hilbert et al., 2010), carbohydrates, and palatable foods, while consuming less protein (Tanofsky-Kraff et al., 2009; Theim et al., 2007). There has been no investigation into how LOC differentially relates to food consumption in African-Americans and Caucasians.

We examined whether measured energy intake and food selection in the laboratory would differ among African-American and Caucasian youth with and without reported LOC. Based upon the higher rates of obesity in African-Americans, we hypothesized that LOC-eating would be more strongly tied to greater food intake in African-Americans than Caucasians. We expected to observe these differences after adjusting for body composition, sex, age, and socioeconomic status (SES).

2. Materials and methods

2.1. Participants

The present investigation is a secondary analysis of a published study and therefore recruitment and inclusion/exclusion criteria are previously reported (Tanofsky-Kraff, McDuffie, et al., 2009). In brief, healthy 8–17-year-olds participated in a study investigating eating behaviors in youth of all weight strata. Written child assent and parent consent were obtained. The study was approved by the *Eunice Kennedy Shriver* NICHD Institutional Review Board.

2.2. Procedures

The study involved three outpatient visits to the NIH Clinical Center. The first visit was a screening. The second and third appointments each involved a laboratory test meal to measure observed energy intake and food selection. Participants adhered to an overnight fast beginning at 10:00 pm the night before each appointment.

2.3. Measures

2.3.1. Body measurements

At the screening, weight and height were measured using calibrated electronic instruments, as previously described (Tanofsky-Kraff, McDuffie, et al., 2009). Body mass index (BMI, kg/m^2) and BMI standard deviation (BMI-z) scores were calculated according to the CDC, 2000 growth charts (Kuczmarski et al., 2002). Body composition (fat-free mass and percent fat mass) was measured using air displacement plethysmography (Life Measurement Inc., Concord, CA). Pubertal status was assigned by staging breast and pubertal hair development (Marshall & Tanner, 1969, 1970) and measuring testicular volume (Tanner, 1981).

2.3.2. LOC-eating

The presence or absence of LOC-eating was assessed with the Eating Disorder Examination (EDE), version 12OD/C.2 9 (Fairburn & Cooper, 1993), or the EDE for children <14 y of age (Bryant-Waugh, Cooper, Taylor, & Lask, 1996). Youth were categorized as endorsing LOC if they reported any experience of lack of control over eating in the past month, regardless of the amount of food consumed. Youth who reported overeating without LOC or no episodes of overeating in the past month were categorized as not having LOC. The EDE has demonstrated excellent psychometric properties in children (Bryant-Waugh et al., 1996; Tanofsky-Kraff et al., 2004) and adolescents (Glasofer et al., 2007).

2.3.3. Observed intake during laboratory test meals

Participants ate *ad libitum* from a multiple-item buffet test meal on two separate days. In random order, youth participated in a "normal meal" (at which they were told to "eat as much as you would at a normal meal") and a "binge meal" (during which they were instructed to "let yourself go and eat as much as you want"). Other than the instruction, all other aspects of the test meal conditions were identical. On both days, participants were served a standard 280 kcal breakfast (74% carbohydrate, 7% protein, 19% fat). Youth remained at the laboratory for the next 6 h, during which they were observed to ensure that they consumed no calorie-containing foods or beverages and participated only in sedentary activities. The test meal consisted of 9835 kcal (12% protein, 51% carbohydrate, 37% fat across all foods) and contained a wide assortment of foods (Mirch et al., 2006). All food items were weighed to the nearest 0.1 g before and after the test session. Energy content and macronutrient composition were calculated as previously described (Tanofsky-Kraff, McDuffie, et al., 2009).

2.4. SES

The Hollingshead scale was used to assess SES based on parental occupation and education (Hollingshead, 1975). Scores range from 1 to 5, where lower scores correspond to higher SES.

2.5. Statistical analysis

Analyses were performed with SPSS 16.0 (SPSS, 2007). Data screening and the handling of outliers have been previously described (Tanofsky-Kraff, McDuffie, et al., 2009). A linear mixed model with repeated measures was conducted with the dependent variable being total energy intake (kcal). The fixed factors were the main and interactional effects of race (non-Hispanic African-American or non-Hispanic Caucasian) and LOC (presence or absence). The repeated measure was meal type (normal versus binge). Covariates included sex, age (y), fat-free mass (kg), percent fat mass, height (cm), and SES (scores 1 to 3 were recoded as "1" to identify "higher" SES and scores from 4 to 5 were recoded as "0" to identify "lower" SES). Puberty was considered in the analyses, but it was correlated highly with age and did not significantly contribute to any model and removed. Parallel, secondary analyses were conducted to examine the effects of race and LOC status on percentage of energy intake from protein, carbohydrate, and fat (arcsine transformed), food groups (kcal of dairy, sweets, snacks, meats, vegetables, fruits, condiments, or drinks). Total energy consumed (kcal) was included as a covariate in the models examining percent macronutrient content intake. In all models, we considered interactional effects among meal type, race, sex, and LOC with energy intake. Differences were considered significant when p values were ≤ 0.05. All tests were two-tailed.

3. Results

Data from 185 youth (M ± SD, 12.98 ± 2.82y; Table 1) were analyzed. The sample was 34.1% African-American and 65.9% Caucasian. Among youth who reported SES (4 were missing), 12% of African-American and 5% of Caucasian youth were categorized as lower SES (Hollingshead 4–5). As previously reported, all youth consumed more energy at the binge meal compared to the normal meal, with no main effect of LOC status (Tanofsky-Kraff, McDuffie, et al., 2009). A similar percentage of African-American (24.2%) and Caucasian (28.9%) youth reported the presence of LOC-eating ($X^2(1, N = 179) = .10, p = .75$).

There was a significant main effect of race on energy intake ($F(1, 172) = 11.12$, $p < .001$; Fig. 1) such that African-American youth consumed more total energy at both laboratory test meals (1608.39 ± 57.33 kcal) compared to Caucasian youth (1362.16 ± 44.00 kcal), after adjusting for sex, age, fat-free mass, percent fat mass, height,