Research report

Clues to maintaining calorie restriction? Psychosocial profiles of successful long-term restrictors

Angela C. Incollingo Belskya, Elissa S. Epelb and A. Janet Tomiyamaa,*

a Department of Psychology, University of California, Los Angeles, CA, USA
b Department of Psychiatry, University of California, San Francisco, CA, USA

ARTICLE INFO

Article history:
Received 26 November 2013
Received in revised form 22 January 2014
Accepted 9 April 2014
Available online 18 April 2014

Keywords:
Dieting
Calorie restriction
Obesity
Personality
Time perspective
Eating disorders

ABSTRACT

To combat the obesity epidemic, interventions and treatments often recommend low-calorie dieting. Calorie restriction (CR) as a weight intervention, however, is often unsuccessful, as most people cannot sustain the behavior. Yet one small group has maintained extreme CR over years – members of the CR Society and followers of The CR Way. This study examined stable psychosocial characteristics of these individuals to identify traits that may promote success at long-term CR. In 65 participants, we measured diet, eating behaviors, and personality traits comparing calorie restrictors with two age-, gender-, ethnicity-, and education-matched comparison groups (normal weight and overweight/obese). We first tested whether the CR group restricted calories without indications of eating disorder pathology, and second, what crystallized psychosocial characteristics set them apart from their nonrestricting comparisons. Results indicated the CR group averaged 10 years of CR but scored lower than comparison groups on measures of disordered eating (p < .001) and psychopathology (p < .001). Particularly against overweight/obese participants, CR participants scored lower on neuroticism (p < .04) and hostility (p < .01), and were stronger in future time orientation (p < .05). Overall, CR profiles reflected high self-control and well being, except for having few close relationships. This study suggests a potential predisposition for successful long-term CR without disordered eating. Since modifying trait factors may be unrealistic, there may be psychosocial boundaries to the capacity for sustaining CR. Paralleling a movement toward personalized medicine, this study points toward a personalized behavioral medicine model in behavioral nutrition and treatment of overweight/obesity.

© 2014 Elsevier Ltd. All rights reserved.

Introduction

Overweight and obesity are highly prevalent in the United States (Flegal, Carroll, Kit, & Ogden, 2012); yet weight-loss is an elusive goal and dieting an often ineffective solution. While dieting – defined here as calorie restriction (CR) – does result in initial weight-loss and is a common clinical recommendation for weight-loss (van Dillen, van Binsbergen, Koelen, & Hiddink, 2013), randomized controlled trials of dieting demonstrate average maintained weight-loss below 1 kg (2.1 lbs; Tomiyama, Ahlstrom, & Mann, 2013). The real challenge then is maintenance; indeed, dieting research has found that the average man could sustain CR for only 6 weeks and the average woman only 4 weeks (Williamson, Serdula, Anda, Levy, & Byers, 1992). CR adherence has been demonstrated to be strongest in the initial weeks with nonadherence rising in subsequent months (Jeffery et al., 2000), and even staff-supported interventions receive only 25% attendance at treatment sessions after 12 months (Jeffery, Wing, Thorson, & Burton, 1993). This highlights the paradox of dieting: for optimal weight-loss, dieting should continue indefinitely, but dieting failure increases over time. Accordingly, CR maintenance failure has been identified as the strongest basis for modest weight-loss outcomes (Hempheld et al., 2007). Perhaps then, sustained weight-loss is unobtainable largely because CR is unsustainable.

To understand why CR might be unsustainable for many who are seeking weight-loss, a critical step is identifying individual differ-

Acknowledgments: The authors gratefully recognize the extraordinary hard work of Trissa McClatchey, Wanda Truong, David Lowry, Jacob Miller, Becky Kim, Lydia Russell-Roy, and Alex Russell. Our deepest gratitude goes to all participants in this study, as well as grateful acknowledgement of the time, effort, and dedication they generously provided. The authors also wish to express special thanks to Paul McGlothin, President of the CR Way Longevity Center, and Meredith Averill, Executive Vice President of the CR Way Longevity Center, for their essential contribution to study recruitment and planning. This research was supported in part by a grant from the Robert Wood Johnson Foundation Health and Society Scholars Program, the UC Berkeley Population Center, the Appleby Health Foundation, and the National Center for Research Resources and the National Center for Advancing Translational Sciences, National Institutes of Health, through UCSF-CTSI Grant Number UL1 RR024131. The contents are solely the responsibility of the authors and do not necessarily represent the official views of the Robert Wood Johnson Foundation Health and Society Scholars Program, the UC Berkeley Population Center, the Appleby Foundation, the NIH, the CR Society, or The CR Way.

* Corresponding author.
E-mail address: tomiyama@psych.ucla.edu (A.J. Tomiyama).
ences underlying successful long-term restriction. Although dieting failure is the norm and long-term successes are uncommon, fortunately, there is a small cohort successfully adhering to CR for years to even decades—the Calorie Restriction (CR) Society and followers of The CR Way. Since long-term CR is their hallmark, identifying distinguishing behavioral and psychosocial characteristics of these individuals may help predict which individuals might be successful at CR and when CR might be a recommendable weight-loss intervention.

Of similar attempts to understand dieting success, most notable is the National Weight Control Registry, which studies individuals with self-reported weight-loss of at least 30 pounds and maintenance of at least 1 year. The Registry averages 6.2 years of weight-loss maintenance and has provided valuable information about common practices of weight-loss maintenance such as daily weight-weighing and exercising (Thomas, Bond, Phelan, Hill, & Wing, 2014). Building on these findings, our study sought to answer an upstream question: what type of individuals can maintain calorie-restricted diets over the long-term, and how are these people unique? For comparison, we recruited free-eating non-CR individuals to more clearly understand the distinguishing characteristics of successful long-term restrictors. Furthermore, we sharpened our inclusion criteria to at least 2 years of CR (whenever possible obtaining third-party confirmation), resulting in a CR group that, upon enrollment, already averaged 10 years of CR. Before conducting any comparisons, we verified the CR group’s self-report behavior, using objective measures such as fasting glucose levels to confirm that they were indeed restricting calories.

Our first aim was to determine whether the CR group differed from non-CR comparisons in disordered eating symptomatology to ensure that any observed differences would be attributable to a unique ability to maintain long-term CR rather than psychopathological traits common to anorexia nervosa. We therefore tested for common symptoms of eating disorders such as excessive shape and weight concern (Gowers & Shore, 2001) and psychopathology like depressive symptomology (Ackard, Croll, & Kearney-Cooke, 2002; Cachelin & Regan, 2006; Crow, Eisenberg, Story, & Neumark-Sztainer, 2006; Gillen, Markey, & Markey, 2012) and obsessive compulsive tendencies (Rothenberg, 1986). We also tested differences in behavioral eating patterns such as external food cue sensitivity, emotional eating, and restraint.

Our second aim was to test our hypothesis that, considering dieting failure is the norm, the CR group must possess key personality characteristics or self-regulation abilities, unrelated to eating (more specific to behavior in general rather than uniquely about eating), predisposing them to successful CR. In the context of this cross-sectional design, we focused on relatively stable characteristics in a preliminary attempt to grasp the directionality of correlational findings. Low neuroticism and high conscientiousness have been identified as influential in successful short-term dieting to at least 2 years of CR (whenever possible obtaining third-party confirmation), resulting in a CR group that, upon enrollment, already averaged 10 years of CR. Before conducting any comparisons, we verified the CR group’s self-report behavior, using objective measures such as fasting glucose levels to confirm that they were indeed restricting calories.

Our first aim was to determine whether the CR group differed from non-CR comparisons in disordered eating symptomatology to ensure that any observed differences would be attributable to a unique ability to maintain long-term CR rather than psychopathological traits common to anorexia nervosa. We therefore tested for common symptoms of eating disorders such as excessive shape and weight concern (Gowers & Shore, 2001) and psychopathology like depressive symptomology (Ackard, Croll, & Kearney-Cooke, 2002; Cachelin & Regan, 2006; Crow, Eisenberg, Story, & Neumark-Sztainer, 2006; Gillen, Markey, & Markey, 2012) and obsessive compulsive tendencies (Rothenberg, 1986). We also tested differences in behavioral eating patterns such as external food cue sensitivity, emotional eating, and restraint.

Our second aim was to test our hypothesis that, considering dieting failure is the norm, the CR group must possess key personality characteristics or self-regulation abilities, unrelated to eating (more specific to behavior in general rather than uniquely about eating), predisposing them to successful CR. In the context of this cross-sectional design, we focused on relatively stable characteristics in a preliminary attempt to grasp the directionality of correlational findings. Low neuroticism and high conscientiousness have been identified as influential in successful short-term dieting to at least 2 years of CR (whenever possible obtaining third-party confirmation), resulting in a CR group that, upon enrollment, already averaged 10 years of CR. Before conducting any comparisons, we verified the CR group’s self-report behavior, using objective measures such as fasting glucose levels to confirm that they were indeed restricting calories.

Our second aim was to test our hypothesis that, considering dieting failure is the norm, the CR group must possess key personality characteristics or self-regulation abilities, unrelated to eating (more specific to behavior in general rather than uniquely about eating), predisposing them to successful CR. In the context of this cross-sectional design, we focused on relatively stable characteristics in a preliminary attempt to grasp the directionality of correlational findings. Low neuroticism and high conscientiousness have been identified as influential in successful short-term dieting to at least 2 years of CR (whenever possible obtaining third-party confirmation), resulting in a CR group that, upon enrollment, already averaged 10 years of CR. Before conducting any comparisons, we verified the CR group’s self-report behavior, using objective measures such as fasting glucose levels to confirm that they were indeed restricting calories.

Subjects

We recruited 30 individuals from the CR Society and followers of The CR Way. We chose this population as they are the largest organization of calorie restrictors with detailed documentation of restriction history. This group also explicitly prioritizes optimal nutrition, which mitigated concerns about malnutrition. Inclusion criteria for the CR group were reporting (1) Body Mass Index (BMI; weight [kg]/[height [m]]²) 24.99 or below and (2) over 2 years of CR. Whenever possible, the President of The CR Way Longevity Center and Vice President for Research of the CR Society International and the Chairman of the Board of the CR Society International and Treasurer and Vice President of The CR Way Longevity Center verified each participant’s self-reported duration of CR.

We also recruited two matched comparison groups: (a) normal weight (BMI 18.5–24.99) free-eaters (n = 16) and (b) overweight/obese (BMI 25+) free-eaters (n = 25) to ensure that the comparisons represented a broad BMI range. Six of these comparisons were siblings of CR participants. We matched the comparison groups on age, gender, ethnicity, and educational attainment. All participants were nonsmokers and none was pregnant. We recruited the CR group in collaboration with the CR Society and The CR Way and then recruited comparison groups from the surrounding community targeting demographics matching CR participants.

Materials and methods

Subjects

We recruited 30 individuals from the CR Society and followers of The CR Way. We chose this population as they are the largest organization of calorie restrictors with detailed documentation of restriction history. This group also explicitly prioritizes optimal nutrition, which mitigated concerns about malnutrition. Inclusion criteria for the CR group were reporting (1) Body Mass Index (BMI; weight [kg]/[height [m]]²) 24.99 or below and (2) over 2 years of CR. Whenever possible, the President of The CR Way Longevity Center and Vice President for Research of the CR Society International and the Chairman of the Board of the CR Society International and Treasurer and Vice President of The CR Way Longevity Center verified each participant’s self-reported duration of CR.

We also recruited two matched comparison groups: (a) normal weight (BMI 18.5–24.99) free-eaters (n = 16) and (b) overweight/obese (BMI 25+) free-eaters (n = 25) to ensure that the comparisons represented a broad BMI range. Six of these comparisons were siblings of CR participants. We matched the comparison groups on age, gender, ethnicity, and educational attainment. All participants were nonsmokers and none was pregnant. We recruited the CR group in collaboration with the CR Society and The CR Way and then recruited comparison groups from the surrounding community targeting demographics matching CR participants.

Procedure

The University of California, San Francisco (UCSF) Committee on Human Research approved all procedures. Participants completed measures assessing psychosocial characteristics and structured interviews assessing social interactions. A subset (n = 26) of local participants (n = 38) completed the surveys as outpatients, while all others traveled to the UCSF Clinical and Translational Science Institute Clinical Research Center (CCRC) to participate as inpatients. To minimize confounds from jetlag and unfamiliar settings, participants located over 100 miles away spent an acclimation night at CCRC before completing procedures. To minimize diurnal activity pattern confounds, participants woke up, ate, and slept according to usual schedules. The CCRC metabolic kitchen prepared specialized calorie-restricted meals for CR participants.

All participants also completed food diaries designed by a registered dietitian that reflected all foods and liquids consumed and the time of day consumed on the Sunday, Monday, and Tuesday preceding the CCRC visit to capture weekend/weekday variability. In addition, each participant received a Bayer glucometer and video/phone training for use during the 4 weeks preceding the CCRC visit. On four randomly chosen nights, study staff contacted participants between 17:00 and 20:00 and told them to note time of last meal and then fast from midnight onward. Participants then reported their fasting blood glucose upon awakening.
دریافت فوری متن کامل مقاله

امکان دانلود نسخه تمام متن مقالات انگلیسی
امکان دانلود نسخه ترجمه شده مقالات
پذیرش سفارش ترجمه تخصصی
امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
امکان دانلود رایگان ۲ صفحه اول هر مقاله
امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
دانلود فوری مقاله پس از پرداخت آنلاین
پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات