

Henning och Johan Throne-Holst stiftelse för främjande av vetenskaplig forskning –

Report from my post-doctoral work with Professor David A. Levitsky, Cornell University.

The Henning and Johan Throne-Holst stipend I was awarded allowed me to work with Professor David Levitsky at Cornell University, NY, USA. The focus was on evaluating a novel behavioral intervention to reduce unhealthy weight gain, and ultimately obesity. This I did, and also much more. In all it was a very productive experience, a great learning experience, and a time that will positively impact my future research in terms of scientific quality and creativity. Finally, it also got me involved with an international network of researchers, residing in many parts of the USA and also the rest of the world.

With the post-doc stipend awarded by Henning and Johan Throne-Holst foundation I was able to continue – and finish - the work I started at Cornell funded by FORTE. The Throne-Holst stipend was essential in achieving this as the FORTE stipend did not cover sufficient time to conduct our experiment and collect and analyze the data.

The research area of Prof. Levitsky comprises a cross-disciplinary approach involving mainly nutrition and psychology, and also information technology. The focus is control of body weight and prevention of unhealthy weight gain and obesity and he is considered a world leading expert in this field.

In 2006, Levitsky et al. published results from the first study to successfully demonstrate that daily weighing can actually reduce age-related weight gain among U.S. first-year college students. This study, performed over one semester and thereafter replicated the next semester, showed that the experimental groups did not gain any weight whereas the untreated controls gained 2-3 kg. The successful method is called the Caloric Titration Method (CTM). It involves daily self-weighing and viewing of a graph that displays weight over time. Since then the group has been refining the method, and I was welcome to join them in evaluating an updated version using internet-connected scales and a novel software.

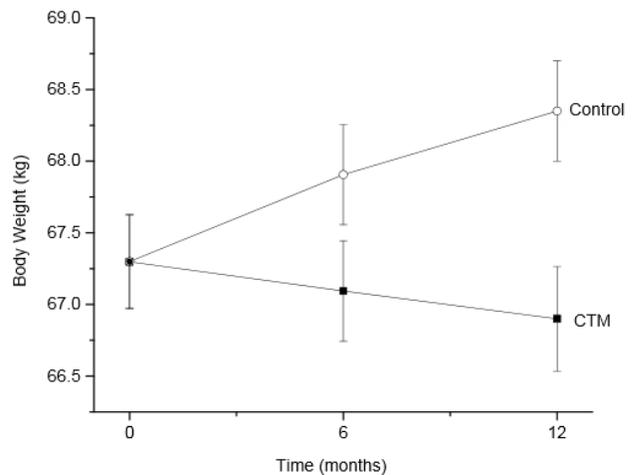
The project I was primarily involved in aimed to evaluate a specific low-intensity intervention to reduce unhealthy weight gain among young adults, known as age-related weight gain. It builds on the updated version of the CTM, including frequent self-weighing as a method to promote body weight control. The method relies on a system providing electronic graphic feedback based on data from a novel internet connected WiFi-scale, coupled with software developed by the research team.



A key assumption in this work is that nutrition information/education is not powerful enough to counter all the “eat-stimuli” we are exposed to, and this assumption is in part validated by the relative ineffectiveness of the substantial amounts of diet and health information available and the simultaneous epidemic of obesity. The massive and historically unprecedented number of food-stimuli in the modern environment has been shown to prime towards increased consumption, and explains why

information/education, will-power and self-control are not sufficient to control weight. Priming is the psychological phenomenon of an initial stimuli exerting an effect which influences the response to a second stimuli, outside our conscious awareness. While priming is thus 'unnoticed' it has potent effects on behavior. The frequent weighing, in combination with the visual feedback of the CTM, may a) work as a goal-prime of weight-control to counterbalance the priming of the food-rich contemporary environment, and b) to augment conscious efforts through classical reinforcement and increased sense of control.

Our main finding in this study was very positive. Among mostly normal weight young adults, after 12 months of intervention the control group had gained over 1 kg, whereas the CTM-group had lost about 0,5 kg. The difference was highly significant. Compliance was high with 95% in CTM-group weighing >3 times per week, and no adverse events occurred. We concluded that the internet based frequent self-weighing CTM system was effective in preventing age-related weight gain in young adults over one year and thus offers promise to reduce overweight and obesity (see figure to the left) (1).



Weight gain prevention with CTM in first-year college students. Error bars are 95% CI.

I was also fortunate to be involved in another study. Also here using the CTM, but in the treatment of obesity in children. The project was situated in Huntsville, Alabama. The children were of low socioeconomic status, many living in trailer parks and mobile homes. The method was applied slightly different, and the results were very rewarding. The children with obesity that self-weighed and received graphic feedback reduced their weight gain, but continued to grow their height, thus reducing their BMI (~1 BMI unit, after 9 months intervention).

In addition I was included in two literature review projects, resulting in two publications (2,3), and one experiment showing the positive effect of introducing nutrition labels in college dining halls (4). I supervised 14 undergraduate students and co-supervised 1 master thesis student.



Professor Levitsky and I, discussing the future of obesity prevention research, in downtown Ithaca.

1. F. Bertz, C. R. Pacanowski, D. A. Levitsky

Frequent self-weighing with electronic graphic feedback prevents age-related weight gain in young adults

Obesity, July, 2015, doi:10.1002/oby.21211

2. K. Casazza, A. Astrup; C. Baum, F. Bertz; A. Brown, M. Bohan Brown, J. Dawson, N. Durant; G. Dutton, K. Fontaine, D.A. Levitsky, T. Mehta, N. Menachemi, PK Newby, R. Pate, H. Raynor, B. J. Rolls, B. Sen, D. L. Smith, Jr., D. Thomas, B. Wansink, D. Allison.

Weighing the evidence of common beliefs in obesity research

Critical Reviews in Food and Nutrition, June, 2014, DOI:10.1080/10408398.2014.922044

3. C. R. Pacanowski, F. Bertz, D. A. Levitsky

Daily self-weighing to control body weight in adults: A critical review of the literature

Sage Open, December, 2014, DOI: 10.1177/2158244014556992

4. C. E. Cioffi, C. R. Pacanowski, F. Bertz, D. A. Levitsky

A healthy small change: the effect of introducing nutrition labels on food purchasing behaviors in university dining facilities

Accepted for publication in Appetite, 92, April, 2015, DOI: 10.1016/j.appet.2015.04.053