Homeostasis and change: A commentary on Homeostatic Theory of Obesity by David Marks

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Abstract
This commentary on David Marks’ article on the Homeostatic Theory of Obesity and his Circle of Discontent mechanism for maintaining problematic eating behavior and obesity offers a perspective on the promise and potential of this theory. At the same time, we challenge the author to incorporate more of a process perspective into the theory. This would include greater exploration of how individuals enter and exit this hypothesized Circle of Discontent, how these mechanisms lead to obesity rather than other internalizing or externalizing disorders, and how the interactions among key variables differ for males and females and developmental stages.

Keywords
circle of discontent, homeostatic theory of obesity, obesity, process of change, self-regulation

Homeostasis is a self-regulatory process. It is automatic or built into many biological and neurological systems for health protection and illness prevention. It also contributes to development and maintenance of many substance abuse disorders since neurotransmitter mechanisms responding to the presence of psychoactive substances in the brain upregulate or down-regulate transmitter and receptor systems. So homeostasis can contribute to both health and illness. It is particularly helpful in thinking about obesity since biological mechanisms adjust to dietary intake making the argument that there are set points or dieting plateaus where the system accommodates and sustains a certain weight. Only additional effort or strategies can then promote change. The biological systems use homeostatic mechanisms to respond to the behavior of the organism. However, when it comes to the organism making behavior change and intentionally employing self-regulation mechanisms, the homeostatic process is significantly more complicated. Behavioral and affective self-regulation mechanisms require feedback processed through cognitive mechanisms and responses to that feedback that involve modification of behaviors. Thus, the behavior change process and its focus on motivation and skills, complications, and contextual influences are critical for understanding and implementing self-regulation when it comes to regulating intentional human behavior.

The Homeostatic Theory of Obesity proposed by Marks offers a satellite level view of health and illness that is interesting and thought provoking. The focus on systems theory is reminiscent of the attempts in the 20th century to view systems approaches and homeostatic and feedback mechanisms as a unifying theory of nature that could offer explanatory value from cell to society. However, that approach was a bit mechanistic focusing on input, throughput, and output but not how the organism shaped the inputs and contributed to the throughputs and outputs. Using a systems approach and homeostatic mechanisms as the building blocks of the theory has important advantages but also can underestimate the importance of motivation and skills and the management of the self-regulatory process by the individual.

In his Homeostatic Theory of Obesity, Marks acknowledges the contributions of this legacy and includes affective and cognitive operations that influence behaviors, thus avoiding the more mechanistic system approaches. In addition, he includes interesting insights and important contributions from the study of human development (attachment theory), advancements in the science of cognitive and...
affective self-regulatory processes (self-perceptions of satisfaction, executive cognitive functioning, and depression and affect regulation), and the importance of reciprocal rather than linear causality.

The theory challenges more static or single factor explanations of obesity and the Circle of Discontent presents an interactive view of four important factors related to the obesity at both individual and societal levels. However, it seems to be less compelling when it comes to understanding how individuals enter and exit this circle of discontent. The discussion of etiology acknowledges genetic contributions but focuses mostly on early attachment, life satisfaction, subjective well-being, and depression or negative affect as the drivers of the epidemic of obesity. It is unclear how individuals enter and exit this circle and how specific these concepts are to obesity. The reality is that a surfeit of negative emotions, poor attachment and interpersonal relationships, problematic achievement and satisfaction with self, and cultural and contextual influences are critical risk factors for most problematic behaviors including both internalizing and externalizing disorders. These same factors are critical for development of substance abuse and other addictive behaviors. Although it is valuable to attempt to understand how these risk factors influence and interact in obesity, it is not clear how these factors might lead someone to be anorexic or obese, overweight, or an abuser of substances. What is needed is a more well-developed perspective on the pathways into and out of obesity.

A process of change perspective is one way of organizing risk and protective factors to understand the pathway into and out of health risk behaviors (DiClemente, 2003). The idea of homeostasis is that systems find a comfortable, functional, or dysfunctional level that supports a set pattern of functioning. Perturbation in the system at that level of habit pattern or set point stimulates mechanisms that can either protect that level of functioning or could push the system to change or adapt to reach another level or set point that could be functional or problematic. Although dynamic systems are continually changing to some degree in response to information, innovations, threats, and opportunities, systems also resist change and protect the status quo. For both individuals and populations, reaching patterns of behavior that are satisfying and healthy and within a moderated, self-regulated pattern of behavior is an ongoing challenge. Adding a process of change perspective might be able to enhance the theory and organize a bit how the interacting factors operate at individual and societal levels.

Initiation of a health risk and health protective behaviors can be viewed as a journey through a process of change characterized by stages of change. There are a number of examples in the literature that highlight this journey for dietary consumption as well as for engaging in adequate physical activity (Bock et al., 1998; DiClemente et al., 2015). The challenge is to understand how early problems in attachment may influence some to overeating or anorexia, others to sociopathy and drug abuse, others to depression or anxiety, and still others to being successful professionals. It depends on how the experiences, environment, knowledge, and opportunities filter the early experiences and influence movement forward in the process of change for these different outcomes. There are both cognitive and experiential processes that influence movement of the individual to viewing and experiencing one or other option (food as comforting, drugs as escaping, food restriction as a way to control life stresses, acting out emotionally as a release from low self-esteem, depressive self-talk as a way of managing expectations). As the individual becomes convinced about the value of these types of coping mechanisms for their well-being, the new patterns of behavior become established and alternative behaviors extinguished. It is during the action and maintenance stages that homeostasis becomes reestablished and the change to the new behavior pattern sustained. We would like to see more on how individuals become vulnerable to the circle of discontent and to how body dissatisfaction develops and drives the negative affect to be connected both to energy dense consumption and to the overweight/obesity dimensions. We need to know more about how the Circle of Content (p. 12) turns into the Circle of Discontent.

Once having described this Circle of Discontent, Marks has done an admirable job of offering substantive research support for the reciprocal relations in the pathways among the four key concepts in the Circle of Discontent. However, there are several issues that are rather hidden in the data and descriptions of the various pathways that need clarification and explication. First, data for different pathways come sometimes largely from studies of adolescents and at other time from adults, sometimes from mostly studies of females, and sometimes studies that include men. Is it assumed that sex and age differences do not matter for the operation of the Circle of Discontent? It would be most helpful to describe this Circle separately for adolescent boys and girls and adult men and women. There is evidence in the article that there are some important differences that should be highlighted. Second, body satisfaction has a cultural basis so body types differ by cultural influences. The model seems to be rather Western and Caucasian in orientation so some mention of these limitations would be useful especially when moving to solutions of revalorizing the thin ideal and destigmatizing. Third, both body dissatisfaction and negative affect are broad concepts that encompass a wide range of realities. Body dissatisfaction can lead to anorexia and excessive exercise and not consumption of high energy foods. Negative affect can include anxiety, which can contribute to more smoking and less consumption (Kasterides and Yen, 2014). It may be best to connect depression and eating rather than keep the concept so broad. It is also important to note that many medication treatments for depression contribute to increased weight. Finally, although some of the studies in this section of the article are longitudinal and can indicate some better sense of causality, most of the studies are correlational and indicate that two concepts (obesity and
negative affect, body dissatisfaction and being overweight or obese) are related but do not allow you to know which came first or how these two interact. In our view, reciprocal causality is a reality when examining all complex human behaviors. However, correlational data limit discussion of pathways since it is not able to examine how multiple influences over time operate to create the mutual influence and how the multiple dimensions in the Circle of Discontent and in the larger treatment and prevention model in Figure 7 interact (Marks, 2015). Underlying this comment is the question of whether there is one or two primary drivers of the obesity epidemic or whether the entire interactive model is needed to operate in order to prevent or treat obesity. It seems implied that activating one dimension activates the others, but this reciprocity is not clearly described.

The final comment about the model relates to the recommendations for solving the obesity epidemic. It is not clear how these flow from the model. The recommendations are not linked to the critical dimensions of homeostasis or the Circle of Discontent. We would have liked to have seen more integration and connection between the key concepts and the recommendations. Is anti-discrimination legislation addressing body dissatisfaction or negative affect? Insurance companies and their policies can be part of the problem or solution since they are concerned with how obesity is driving up costs and are trying to find meaningful ways to prevent and treat it. However, identification of individuals who are overweight is part of the process. Is this stigmatizing? How could health professionals sell an ideal weight without creating a bit of a stigma? Suggestions for reducing energy dense consumption offer an array of approaches from environmental to individual but most seem unconnected to the other variables in the Circle of Discontent. So the question of how the model can inform our prevention and intervention efforts is not really answered.

What is the primary purpose of the model? At some points, it seems that the model is really one that is designed to describe etiology. However, that is critiqued above. The model does not describe well how one gets into the circle and how obesity becomes the key behavioral issue. It seems that the model is really a model of maintenance of obesogenic behaviors and how once an individual is in this circle they remain stuck inside with the model describing all the reciprocal interacting factors that hold the high energy consumption and overweight/obesity in place. As such it is valuable as a heuristic. However, a better connection between the model and how interventions could be used to break the circle would help the Circle of Discontent and the suggested prevention/treatment model become a model that could direct interventions. For example, taxing high-density foods would decrease availability for the most vulnerable. Obesity is often connected with poverty, disparities, and a host of other problems. Maybe tax incentives could eliminate some of the “food deserts” that exist in poor neighborhoods and offer healthier foods. The Women, Infants, and Children (WIC) example in the manuscript offers a way to provide incentives to those who are poor and struggling with stress and depression in order to access better options and feel better about how they are feeding their children. That intervention could address negative affect, access, and dietary consumption. Selling plant-based diets focuses also on consumption but could be connected with negative affect and body satisfaction. Making these connections would detail how the interventions can disrupt the sense of being stuck in the Circle of Discontent. However, as soon as you discuss both personal and societal solutions, one enters into the realm of motivation. Once again, some greater focus on motivation and how to promote change is needed at each point in the prevention and intervention model in Figure 7 (Marks, 2015).

In summary, Marks’ model offers an interesting and intriguing perspective on the complexity and recalcitrance of the battle to address the epidemic of obesity. The reciprocal connections between his concepts in the Circle of Discontent are seemingly irrefutable. Although similar to other models in the literature, this model offers a view of how overweight and obesity are maintained over time for both individuals and societies. As such it offers food for thought about our solutions. Including a better view of how individuals enter and exit the circle that focuses on motivation and the process of change for both individuals and populations or societies would address an important dimension that seems missing. Finally, greater definition of variables and populations as well as more extensive connections between the variables in the model and the solutions proposed would enhance its impact.

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