

Obesity and its many physical co-morbidities (e.g., hypertension, heart disease, diabetes) represents a significant concern both for affected individuals whose quality of life is severely reduced, and society in general, where health care costs are estimated to be in excess of \$190 billion annually. Unfortunately there is a lack of available pharmacotherapeutic strategies to aid in reducing body weight in obese individuals.

Based on the idea that natural and drug rewards are subserved by similar brain systems, researchers have suggested that an addiction to food may in part underlie the obesity epidemic (DiLeone et al., (2012). *Nature Neuroscience*, 15(10), 1330–1335; Kenny, P. J. (2011) *Nature Reviews Neuroscience*, 12(11), 638–651). You are required to evaluate what is known regarding the similarities and differences in the neural systems underlying addiction and food, and the implications of these findings.

Your answer will be in the form of a three-part response:

- 1) The food addiction hypothesis (Avena, et al., (2008). *Neuroscience and Biobehavioral Reviews*, 32(1), 20–39) suggests that certain foods (e.g., those high in sugar) can lead to addiction-like behaviors (e.g., dependence) and changes in neuronal circuitry similar to that seen with drugs of abuse. Critically review and discuss the neurobiological and behavioral evidence in support of this position. Be sure to address specific system and circuit changes to dopamine and opioids.
- 2) A number of studies in animals (e.g., Caine, S. B., & Koob, G. F. (1994). *JEAP*, 61(2), 213–221) and humans (e.g., Karlsson et al., (2015). *Journal of Neuroscience*, 35(9), 3959–3965) suggest differences in circuitry underlying drugs of abuse, and natural rewards (i.e., food) that result in obesity. Critically review and discuss these distinctions and their implications for the food addiction hypothesis.
- 3) Based on your review of the literature and response to the above questions—do you believe that an addiction to food exists, and what is its influence (or lack thereof) on the obesity epidemic? What are the implications for prevention, diagnoses and treatment? State your opinion clearly and provide empirical support for all your responses.

Additional details:

Please limit your answer to 10-15 page limit, double spaced, excluding references.

The weighting of each part is as follows: Part 1 -40%, Part 2- 35%, Part 3-25%.

Be sure to support your statements with proper literature citations.

It is expected that each response will include empirical support beyond the references provided in this document.