

### Sample Literature Review

This is a literature review I wrote for Psychology 109 / Research Methods I. It received an A. The assignment was to read a variety of assigned articles related to the topic of food and mood, as well as several articles on the topic that we found on our own. Then, we were to write a literature review in which we identified a theme from our readings on the topic and crafted a thematically organized essay, drawing on the articles we read. Unlike an annotated bibliography, in which the articles cited are presented in chronological order without an overarching theme connecting them, a literature review synthesizes the findings from multiple studies and has a thesis statement highlighting a general theme of the research that emerges from the studies and will be discussed throughout the review. Also, unlike a research report, a literature review is not organized into discrete introduction, methods, results, and discussion sections. Its organization is much more flexible, as it revolves around the themes being discussed from the literature.

I have annotated places in this paper that highlight some key features of literature reviews. I have omitted some sentences that contained mostly methodological details and data from several of the sections. However, I have left the introduction and conclusion completely intact to provide an example of the general structure and content of these sections of a literature review. While the bold headings above each section are not necessary in a literature review, they are included here to illustrate what each section is addressing and the thematic organization of the paper.

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#### Emotional Eating: The Perpetual Cycle of Mood-Food Influence<sup>1</sup>

##### Introduction

It is no secret that obesity is a major health concern in the U.S., and stress and other negative emotions may be contributing to the problem. There has been much research on how the food we eat affects our physical health, but comparatively little research on the relationship between our eating behavior and emotional states.<sup>2</sup> Studies have found that there is some science behind the tendency to drown our sorrows in a pint

<sup>1</sup> The title is concise and specific. It is not too long and states what will be discussed in the paper.

<sup>2</sup> These introductory sentences explain why research on the topic is relevant and provides a general statement of where current knowledge on the topic stands.

of Ben & Jerry's (Oliver & Wardle, 1999; Epel, Lapidus, McEwen, & Brownell, 2001). Research has also highlighted gender differences in the ways men and women use eating to cope with stress (Christensen & Brooks, 2006). The relationship between food and mood runs in the reverse direction as well, as eating behavior appears to have some bearing on subsequent moods: higher consumption of calories, saturated fat, and sodium are associated with negative moods one to two days later (Hendy, 2012). While increased consumption of "comfort foods," such as chocolate, ice cream, and potato chips, may provide temporary relief from stress and other negative emotions, these effects appear to wear off, perpetuating a cycle of stress-eating, which can lead over time to obesity (Dallman, Pecoraro, & la Fleur, 2005; Tomiyama, Dallman, & Epel, 2011).<sup>3</sup> Research has shown that the relationship between food and mood is bidirectional: our moods can influence the type and quantity of food we consume, while the food we consume can in turn influence our later moods and, in some cases of chronic stress, lead to obesity and a dampening of the chronic stress response network.<sup>4</sup>

### **Influence of Mood on Eating Behavior<sup>5</sup>**

Our emotional states play a significant role in the quantity and types of food we choose to eat. Studies have looked at the self-reported eating behaviors of male and female undergraduate college students in response to stress. One such study administered

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<sup>3</sup> Previous research is drawn upon and specific studies are cited. The findings from these studies will be discussed in further detail later in the paper.

<sup>4</sup> This is the thesis statement of the literature review. It identifies a general finding from the various articles that were looked at and goes from broad (the relationship between food and mood is bidirectional) to specific (our moods can determine the types of foods we eat and the types of foods we eat can in turn influence our moods, leading to a dampening of the chronic stress response network).

<sup>5</sup> This section addresses one element of the bidirectional relationship identified in the thesis statement: the influence of mood on eating behavior.

questionnaires to participants, assessing their beliefs about the effects of stress on their eating behavior (Oliver & Wardle, 1999). The results showed that about equal numbers of participants reported that they would increase their overall food intake when under stress (42%) and decrease their overall food intake when under stress (37%). Most of the participants (73%) reported increased consumption of snack-type foods when under stress. (Oliver & Wardle, 1999).<sup>6</sup> Thus, it appears that stress does have some effect on eating behavior. A possible explanation for these trends is that snack-type foods, such as sweets and chocolate, are calorically dense and quick to eat, making them a convenient choice when we are under stress and do not have much time to eat. These snack-type foods also boost levels of the neurotransmitter serotonin, which improves mood and relieves stress (Oliver & Wardle, 1999). Thus, individuals may be drawn to snack-type foods as a way to self-medicate against their stress.<sup>7</sup>

There are some areas of this research in need of more explanation, however. Oliver & Wardle's (1999) research report does not offer a clear operational definition of stress as defined in the questionnaires. There are many different ways to measure stress and varying degrees of stress, so it would be helpful to know how stress was defined in this study. Furthermore, this study is limited in its implications because it only assesses participants' beliefs about their eating behavior when under stress; it does not measure their actual behavior. Thus, we cannot be certain that the participants' self-reported eating

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<sup>6</sup> Specific findings from one of the research reports looked at are cited, giving support to the thesis statement.

<sup>7</sup> Possible explanations for the findings are identified, and any ideas that are not my own are cited.

behaviors in response to hypothetical stress accurately represent what they would actually eat in response to real-life stress, as actions do not always follow beliefs.<sup>8</sup>

Another study looked at the effects of acute stress on eating behavior in premenopausal women aged 30-45 years. Participants completed both stressful and non-stressful tasks in separate sessions in a lab. After each session, they were exposed to snacks, and experimenters measured their food intake. Their levels of salivary cortisol, a stress hormone, were measured before the task, during the task, and afterwards (Epel et al, 2001).<sup>9</sup> The results showed that participants with higher salivary cortisol levels consumed more total calories and more sweet, high-fat snacks following the stressful tasks, and more sweet snacks following both the stressful and non-stressful tasks (Epel et al, 2001).<sup>10</sup> Cortisol release in response to stress may increase appetite and drive us to consume more food and show preference for sweet and high-fat foods (Epel et al, 2001). Thus, higher cortisol levels may increase individuals' vulnerability to stress-induced overeating.<sup>11</sup>

### **Gender Differences<sup>12</sup>**

Further research has found differences between men and women in the perceived effects of mood on eating behavior. One study looked at male and female undergraduate

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<sup>8</sup> This paragraph identifies areas of the research in need of more clarification and weaknesses in the particular study. This is an area where a key difference between a literature review and a research report can clearly be seen—I have included my own analysis of the effectiveness of the study, whereas in a research report, I would have been much more objective.

<sup>9</sup> A brief description of the methodology used in this study is given so the reader has some context for interpreting the results.

<sup>10</sup> Again, findings of the study are reported to lend support to the thesis statement.

<sup>11</sup> Possible explanations for the findings also lend support to the theme of the influence of mood on eating behavior.

<sup>12</sup> This section addresses a common finding mentioned in most of the studies looked at: the different ways that mood seems to influence eating behavior in men versus women.

college students' self-reported predicted eating behaviors in response to imaginary situations designed to make them feel happy or sad (Christensen & Brooks, 2006) . . . [sentences omitted] . . . Women report more food cravings than do men, which could explain why women report specifically increasing their consumption of sweet, high-fat, high-carbohydrate foods in response to sad events. Women may be more likely to consume serotonin-boosting foods high in sugar, fat, and carbohydrates as a coping mechanism for dealing with distressing emotions such as sadness, while men may use other mechanisms, such as exercise, to cope with distress (Christensen & Brooks, 2006).<sup>13</sup>

Oliver and Wardle (1999) found that both women and dieters report consuming more snack-type foods, such as sweets and chocolate, in response to stress than do men and non-dieters. Women and dieters may be more likely to restrict their eating when not under stress out of concern for body image . . . [sentences omitted] . . . In contrast, men who are not dieting likely do not restrict their eating as much when not under stress, and may not feel the need or desire to increase their consumption of high-calorie foods when under stress. In contrast, they may see happy moods as a more suitable occasion to increase food consumption, which would support the findings of Christensen and Brooks (2006).<sup>14</sup>

### **Influence of Eating Behavior on Later Moods<sup>15</sup>**

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<sup>13</sup> A specific study is cited to highlight gender differences, and possible explanations for these differences are proposed.

<sup>14</sup> Another study showing related findings is cited. This synthesis of findings from multiple studies is key to the thematic organization of a literature review and the goal of interconnecting multiple studies.

<sup>15</sup> This section addresses the next element of the bidirectional relationship identified in the thesis statement: the influence of eating behavior on later moods.

The relationship between food and mood appears to run in the opposite direction as well: the food we consume affects our later moods. This has been shown in a study looking at the sequential relationship between food and mood over a seven-day period of undergraduate college students' everyday lives (Hendy, 2012). This study was able to show the effects of eating behavior on students' later moods in the context of the natural, day-to-day stressors they experienced. The results showed that negative moods tended to be reported one to two days after consuming higher amounts of calories, saturated fat, and sodium, while the associations between food consumption and positive moods were less consistent (Hendy, 2012).<sup>16</sup> These findings suggest that stress-induced eating may be a perpetual, vicious cycle. When we eat foods higher in calories, saturated fat, and sodium in the presence of stress, these foods may give us temporary relief, but leave us feeling stress and other negative emotions one or two days later. This drives us to consume more of these types of food in an attempt to relieve our negative emotions, continuing the cycle.<sup>17</sup> Over time, this can lead to weight gain and obesity.<sup>18</sup>

### **Chronic Stress Response Network<sup>19</sup>**

Stress-induced eating can perpetuate a cycle of negative moods and increased consumption of high-calorie comfort foods, and this can have negative health consequences over time. Dampening of the chronic stress response network has been

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<sup>16</sup> The general methodology and results of a specific study are cited to support this part of the thesis statement.

<sup>17</sup> This idea of a vicious cycle between negative moods and emotional eating applies to the next section of the paper as well.

<sup>18</sup> This sentence puts the findings discussed into a larger context and reminds the reader of the importance of the research on this topic—its implications on weight gain and obesity.

<sup>19</sup> This section addresses the third and final element of the thesis statement: how the bidirectional food-mood influence, through a dampening of the chronic stress response network, can lead to weight gain and obesity in cases of chronic stress.

shown to play a role in the development of obesity over time in those who experience chronic stress (Dallman et al, 2005; Tomiyama et al, 2011).<sup>20</sup> The chronic stress response network is regulated by the hypothalamo-pituitary-adrenal axis (HPA), and involves the hormones and brain systems that are activated in response to stress (Dallman et al, 2005).<sup>21</sup> Experiments have demonstrated that rats exposed to stress initially show high levels of secretion of the stress hormone corticosterone, which is associated with food-related drives (Dallman et al, 2005) . . . [sentences omitted] . . . Their chronic stress response networks were stimulated to release lower levels of corticosterone and other stress hormones because the comfort foods these rats consumed were doing most of the job of providing stress relief (Dallman et al, 2005).<sup>22</sup>

This muting of the chronic stress response network has been reported in humans as well. In a study that looked at 59 premenopausal women, those who were chronically stressed (as defined by the Perceived Stress Scale) showed lower levels of cortisol secretion than those who were not chronically stressed, indicating diminished HPA activity (Tomiyama et al, 2011).<sup>23</sup> . . . [sentences omitted] . . . These findings suggest that chronic stress can lead to increased consumption of comfort foods, dampened HPA activity, and obesity, as individuals engage in a cycle of emotional eating as a way to self-medicate against their stress, in response to muted chronic stress response networks.

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<sup>20</sup> The findings of multiple studies are interweaved in this section.

<sup>21</sup> Some background on the chronic stress response network is given.

<sup>22</sup> This study found evidence of a dampened chronic stress response network in response to stress-induced eating in rats.

<sup>23</sup> This study found evidence of a dampened chronic stress response network in response to stress-induced eating in humans.

There are some limits, however, to the findings of these studies.<sup>24</sup> The Tomiyama et al (2011) study on premenopausal women and chronic stress did not test the chronically stressed participants' levels of HPA activity at a point in their lives when they were not chronically stressed . . . [sentences omitted] . . . Thus, we cannot make definite conclusions about the direction of the relationship between stress-induced eating and the dampened chronic stress response network.

### **Conclusion**

Research on the topic of food and mood has shown that the comfort foods many of us indulge in when we are experiencing stress or sadness are aptly named.<sup>25</sup> These foods may provide temporary relief from negative emotions, but unfortunately this relief doesn't last. Increased consumption of comfort foods tends to leave us feeling down again a day or two later, which can drive us to consume yet more comfort foods, perpetuating a cycle of stress-induced emotional eating. Over time, chronic stress and emotional eating can lead to obesity, as our bodies' chronic stress response networks show decreased activity and we rely on comfort foods as medication for our stress. Many studies investigating food and mood have focused on women, as women are more likely to report increased comfort food consumption in response to distressing emotions. However, the findings of these studies have important implications for the health of both males and females, as obesity is a public health crisis in America.<sup>26</sup>

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<sup>24</sup> Again, I have provided my analysis of the effectiveness of a study. I have addressed how its limitations prevent us from making conclusions about the direction of the relationship between stress-induced eating and the dampened chronic stress response network.

<sup>25</sup> This sentence zooms out to the broader context of the paper.

<sup>26</sup> This sentence points again to the relevance of the topic.



The research on food and mood gives insight into the roles of both the body and mind in causing obesity. With a greater understanding of the roles of stress and other negative emotional states in causing the eating behaviors that can lead to obesity, we can help individuals cope with stressors in healthier ways.<sup>27</sup> The bidirectional relationship between food and mood suggests that by avoiding overconsumption of comfort foods, we can break the perpetual cycle of stress-induced eating and end up healthier, both physically and emotionally. The next step should be to research the effectiveness of alternative coping mechanisms for stress and other negative emotions, such as mindfulness and exercise, and to develop ways to help individuals integrate these healthier coping mechanisms into their lives.<sup>28</sup>

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<sup>27</sup> Practical applications of research on the topic are discussed.

<sup>28</sup> This closing sentence suggests where to go next with research related to this topic.

References<sup>29</sup>

- Christensen, L., & Brooks, A. (2006). Changing food preference as a function of mood. *The Journal of Psychology, 140*(4), 293-306.
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<sup>29</sup> The APA formatted reference list includes all articles cited in the literature review.