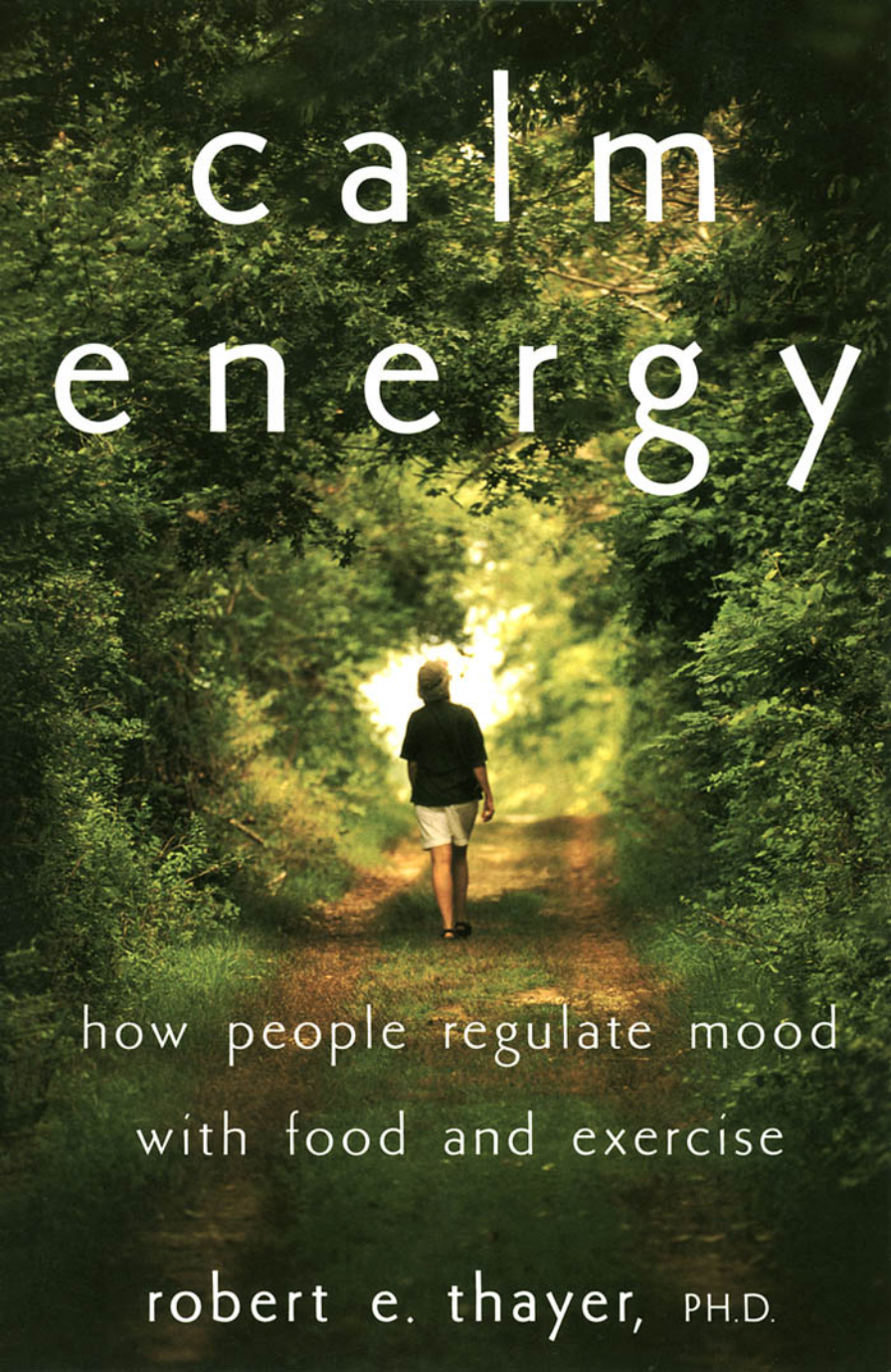
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## HOW PEOPLE REGULATE MOOD

# WITH FOOD AND EXERCISE

*Robert E. Thayer, Ph.D.*

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*For Leah and Kara,*
*two loved ones who provided support for me in writing this book.*

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# *Contents*

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# *Preface*

Alarming predictions about the epidemic of obesity have been the subject of countless discussions in the popular media, fueled by dire warnings from public health experts. But the reasons why so many more people are overweight or obese have remained mysterious. Why we eat too much and exercise too little becomes apparent when we look at mood as the backdrop of our lives. Much of what we do, day in and day out, revolves around our moods and the ways we attempt to manage them. Society at large provides an important stage for our mood-regulating activities. We live in a faster-paced and more stressful world than our grandparents did. Many people turn to food as a kind of self-medication.

In this book I try to clarify the active role our complicated moods play in our daily lives, including how we experience energy and tension. I try to show that poor eating habits and the avoidance of exercise are directly traceable to these moods. I also demonstrate how our awareness of important signals provided by our bodies can be effectively used to manage overeating and to increase exercise.

This book is not a self-help manual, but I do try to provide clear suggestions about how to control overeating and how to motivate ourselves to exercise. Since I started my scientific studies, over two decades ago, I have had an abiding interest in the nature of mood and in what causes our moods to change. My first research projects took place in the physiological laboratory with precise experimental manipulations and observations, but later they progressed to a naturalistic setting with analyses of how moods affect the totality of our lives. Throughout the years, I have seen

how food and exercise are central to mood change, but the exact evidence for these interrelationships has remained maddeningly elusive until relatively recently. The latest scientific research has finally made these connections clear. I dealt with the theoretical issues of this topic in my previous books, *The Origin of Everyday Moods* and *The Biopsychology of Mood and Arousal,* but here I give full attention to mood, food, and exercise; nowhere else have these dynamics been fully explained.

My ideas are based on solid scientific research, presented in clearly understandable language. The field of weight control and exercise maintenance has become overrun with hype. In this book I steer clear of the oversimplification and unscientific claims of so many publications on diet and exercise, with the result, I hope, that readers will come away informed and enlightened.

Many people have been helpful in the creation of this book, not the least of which are the students in my university classes, who have analyzed and followed in detail the variations of mood and its influence on food and exercise. I have learned a great deal from these discussions, and frequently I realized I was going in the wrong direction in my thinking when practical examples were fleshed out in class discussions. It is extraordinarily helpful for a researcher to have a group of such thoughtful and educated people to consider ideas and offer suggestions.

In addition to this general help, I am particularly thankful to students, colleagues, and friends whose cases I use to clarify concepts in this book. Sometimes I have kept their real names; in other cases the names and insignificant life details were changed to maintain anonymity; in a couple of cases the experiences of two or more people were combined to make a point.

Of the individuals who helped me in writing this book, none was more important than Joan Bossert, my editor at Oxford University Press. She not only supported and encouraged my pursuit of these matters at early stages but also read, critiqued, and offered suggestions, chapter by chapter. Repeatedly, I was struck by her understanding and insights into technical psychological concepts, which seemed on many occasions on a par with those of my colleagues who are scientists. And, expert as she is in principles of good communication in print, she was able to call my attention to places where I strayed off course and often to suggest ways to get back on track.

I wish especially to thank Retha Evans, who patiently read and commented on each chapter. She often gave me the confidence I needed to know I was on the right track. And, sorting expertly through the complex concepts involved, she would go straight to the core of the matter in her analyses of my writing and facts as I presented them.

I would also like to thank three well-known scientists who read portions of the book and made many helpful comments. The distinguished physiological psychologist Alexander Beckman provided excellent observations and suggestions about the physiology discussed in the book. Larry Christensen, recognized widely for his important research and writing on diet and behavior, offered good ideas for parts of the book. And Steven Petruzzello, an exercise scientist whose outstanding research is widely recognized, provided many important suggestions. Since these scientists made suggestions that I did not always follow, I am to blame for any errors within.

Long Beach, California R.E.T.

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CHAPTER 1

# *Mood, Self-Regulation, and Overeating*

YOUR MOODS DETERMINE your enjoyment of life. When you are in a good mood, enjoyable activities can be great fun, even exciting. You deal with the things you put off, though you find them unpleasant. But when you are anxious, you feel like snapping at everyone. You probably feel irritable, and you may even develop depression. The world looks dark and uninviting, and everything seems hopeless. It doesn't matter how often people tell you that things are fine; a negative cast to all the events that take place in your life clouds your ability to enjoy simple pleasures. In a very real sense your moods are more important than events, since your moods determine how much of those events you will be able to enjoy.

Your mood systems, as we sometimes refer to them scientifically, reflect your physical as well as your psychological being. If you ask the average person what causes moods, you will often get an answer that is only partially right. He or she will tell you that events and circumstances control our moods: "He was rude to me"; "My car broke down"; "I had trouble at work." But if you think logically about this, you will see that there is a problem with it. Events and circumstances are often random, but our moods are closely related to how much sleep we had, how healthy we are, when and what we last ate, and what kind of exercise we had lately. Even the time of day is important to our moods.

Furthermore, our moods are correlated with the momentary biochemical reactions of our brain: our hormones coursing through our bodies in differing concentrations at one time or another, blood sugar levels

in continuous variation, the tension of our muscles rapidly changing as we encounter problems or feel relaxed, and a host of other shifting physiological reactions. Moods change, and we can identify the biological conditions that are the most probable underpinnings of those changes.[1] Events and circumstances do influence mood, but they happen on top of a biological edifice that gives them greater or lesser importance.

For well over two decades I have studied these issues as a scientist, and one of the most interesting findings that consistently emerges concerns how people try to *self-regulate* their moods. I find that this is almost like a self-medication process. The list of things we use to control our moods and feelings from moment to moment is endless: food, drink, social interaction, music, coffee, cigarettes, intentionally diverting our thoughts, and much more. The behavior or substance we turn to can be thought of as something like a drug of choice. We all want to avoid bad moods, and we all want to be in a good mood as much as possible.

Research has shown again and again that we are constantly self-regulating our mood.[2] Sometimes it is conscious, but often we aren't aware that we are relying on certain habits to accomplish this, habits we resort to when we are feeling slightly out of sorts. We all do things to make ourselves feel good, and when we are feeling bad (a bad mood) we turn to those things that worked in the past. Much of the time, our methods of self-control work very well, but some of the things we use to self-regulate work only temporarily and leave us in a worse mood in the long run. Chris is an example of someone using a method successfully.

Chris, a returning college student in her early forties, seems to know how to control her moods, at least for a while. When she is in a bad mood, she immediately calls one of three good friends. They all have more or less the same mood-regulating strategy, like the women in the movie *The First Wives Club*. They arrange lunch or a trip to the mall for some shopping, and Chris says it works. At the end of the lunch, or after an afternoon at the mall, she feels good again. Those mild but annoying feelings of depression have vanished.

In one extensive set of studies about ways that people self-regulate their moods, we found that, when bad moods occur, the first thing most people do is to seek some kind of social interaction.[3] They pick up the phone. Or they try to be with someone, especially someone who will listen to them and make them feel better. Women are much more likely to

do this than men, but both sexes do it.[4] When a bad mood becomes obvious, another common thing that we found people doing is to try to change the way they are thinking. They try to think positively, or to think about something other than their troublesome problem. They also try not to let things bother them. Many people give themselves a pep talk when their mood is low. Men use these cognitive techniques more than women, but again it's a strategy that both sexes use.

When our mood is low, almost half of us listen to music to regulate our feelings. Younger people listen to music more than others. My daughter Leah is a good example. She has a whole library of CDs and tapes that she listens to selectively, depending on her mood. When I told her about the results of our research showing how often people use music for mood regulation, she wasn't at all surprised.

Older people turn, instead, to other routines that make them feel better. They may tend to their chores—cleaning the house, working in the garden, catching up on correspondence. These appear to be excellent mood regulators. My late mother was always in a good mood. She had certain healthy routines that probably contributed to her positive disposition. For example, in a typical day she would work on her garden in the morning, then she would straighten up the house and go to the market. Later she'd write letters or read spiritual books of interest to her. This last practice is especially consistent with our research findings. Many older people told us that they turn to religious and spiritual activities as a way of feeling better when their mood is low. Social scientists often lose sight of how seemingly mundane daily activities like chores or gardening, and spiritual activities such as regular religious observances and prayer, can have strong influences on our mood.

About a third of us exercise when our moods are low.[5] This is a surprisingly small percentage, considering, as we will see in subsequent chapters, that moderate exercise is the best technique for feeling better immediately. It is effective, swift, and reliable. All of the things I mentioned work to raise our moods, but some, like exercise, work better than others.

## Eating and Other Mood Regulators

About a third of us admit to eating as a way of self-regulating mood. Women admit this more than men do, but nearly everyone uses this method, at least

from time to time.[6] No mystery here: eating good-tasting food makes us feel better right away. But a short time after we eat a sugary snack, our mood sinks (just sixty minutes later in one study).[7] Why do we eat when we really aren't hungry, when it breaks our diet and makes us feel bad about ourselves? The pleasure of eating is highly motivating, and the immediate good feeling it gives us is a lure. Even an overeater who regrets eating junk food and feels guilty soon after, or who feels tired and tense sixty minutes later, is controlled by her eating habit. In the psychology of learning, this is the well-known principle of positive reinforcement.[8]

Justine is a good example of someone who uses food to self-medicate. Most people who know her do not realize that she uses food this way because they never see her eating in public. But her weight gives away her mood-regulating habit. A young, fairly active woman, Justine is forty pounds overweight. Food, often consumed in private, is the primary way she regulates her mood.

For Mark, alcohol is the drug of choice. A few drinks with friends several times a week became drinks every night in front of the TV, then covert drinking during the day. Men are more likely than women to use alcohol to self-regulate their moods, but, once again, both sexes do turn to it.

For many people, cigarettes are continuous mood regulators and the nicotine habit is closely linked to a specific time interval. A person who smokes one to two packs a day lights up a cigarette every half-hour or so. When he finds himself in a meeting or someplace where he can't smoke, he will feel tense until he can smoke again. The tension will be apparent in his increasingly agitated demeanor. When left without a cigarette, addicted smokers are driven to avoid the unpleasant tension that builds. Their people mood regulation operates openly and continuously. The cigarette calms them down, gives them a lift, or, more often, does both.

Coffee, and caffeine in general, is another widely used mood regulator in our culture. Caffeine and tobacco work on our moods in a similar way that food does. Countless people depend on coffee and caffeinated soft drinks to feel better, not just in the morning to wake up. They drink it all day. (Just look at the success of Starbucks and other coffee bars.) Americans are hooked in this respect, and so are Europeans. One of my colleagues, a professor from Stockholm, told me that it isn't unusual for Swedes—who live in more northern latitudes than most people in this country—to ingest over 1000 milligrams of caffeine a day (that's more than ten cups of coffee). Of course, North Americans are not immune; a

friend of mine suggested it is understandable why Starbucks originated in the northern city of Seattle, Washington.

Most of the time we aren't even aware of what we are doing when we try to control our moods. Habits are like that. If eating worked for us before, for example, when we feel bad, we develop a certain pattern without realizing it. First, our thoughts about good-tasting food begin to dominate our thinking, and it is a short step from thoughts to action. Of course, we may be reminded about a diet, and we know we shouldn't eat the forbidden food, but people have great powers of rationalization. "I didn't eat much last meal," we may tell ourselves, or "I deserve something good." Our excuses flow into mind with perfect ease. Even if we recognize these flimsy excuses for what they are, there often comes a point when we must eat the forbidden food because it is the only thing that will interrupt the urgency of the negative mood, even if just for a little while. Habits that worked before become almost automatic. They control us even in the face of strong resolve.

We regulate our mood when we feel bad, but we also do things to feel better when we are already feeling okay. We may overeat at a party or during pleasant interactions with our family and friends. Having a glass of wine with dinner or a cigarette when you feel contented are other good examples. Recreational drug users probably fall into this category. Others use exercise as a way of "firing up," as one of my students called it. She exercises when she wants to feel really good, not just all right. Here we aren't trying to escape from a bad feeling, but a kind of memory of things past that made us feel good now motivates us to reestablish that good mood once again.

When it comes to overeating, though, more often it is a negative mood that leads to it—"emotional eating," many people call it. This kind of mood regulation is the most important cause of overweight. In this book I concentrate on eating to change a bad mood, but I will come back to other kinds of positive self-regulation later, especially when we analyze the most optimal moods.

## Mood and Overeating

In discussing overeating, countless magazine articles and popular books focus on the type and balance of foods you should eat, artificial appetite suppressants, natural metabolism differences, genetic predispositions,

setpoint theory, and a host of variations. But managing your mood is one of the most important keys to controlling overeating. Most of the commonly discussed causes of overeating affect us through the mechanism of mood, in my view. For example, most scientists today accept the fact that there are genetic predispositions to overweight, but exactly how this occurs is not understood. I suggest that one likely causal path is through the food and mood link.

On the topic of food and mood, there is a body of credible evidence, but it is not about how different foods affect our moods—there is not as much reliable evidence about that. Instead, it is about how our moods affect our desire to eat. In one review of more than fifty scientific studies of emotional eating, the triggering emotions or moods invariably were identified as depression, anxiety, anger, boredom, and loneliness.[9] Most studies focus on the way these negative moods occur immediately before a diet is broken or as a likely cause of some eating disorder, including obesity. In my view, if you forget everything else—including the kinds of food to eat, their relative proportions and exact amounts—but you master your moods, you will go a long way toward controlling overeating.[10]

Although negative moods control our eating because good-tasting food allows us to counteract these unpleasant feelings, this relationship is more complicated than it appears. We know that bad moods are characterized by low energy and good moods with high energy. For example, when you are feeling depressed you have little energy, but in the best moods your energy is abundant. Food offers an immediate correction for low energy; it relieves your tension and gives you a lift. We may not think of food as an energy enhancer, but that is its effect. If you doubt that food energizes you, notice sometime when you are driving while tired—an unwise thing to do—that eating a snack wakes you up a little. It allows you to stay alert, even if only for a little while.[11] (Incidentally, if you eat a lot of rich food, you may wake up for a little while, but soon you can expect to feel even more tired.)[12] When we feel better after we eat, it is partly from this elevated energy.

## A Theory of What Moods Tell Us

Negative moods are like subtle indications that we need more energy. When we self-regulate our moods to make ourselves feel better, we raise

our energy. We react to our moods at some level of consciousness, however deep. Therefore, these moods subtly guide our decisions and actions with regard to food, a ready energy source.[13] This guidance in the form of motivation to eat is not always immediate, but over time it has an effect. One of the best indications of the energy-food link is that overeating typically occurs when energy is low. That is one reason diets are most often broken in the late afternoon and evening, times of lower energy. I believe that motivation to eat something to raise our energy when our moods are low is a basic biological response.

Tense or anxious moods, which often prompt us to eat, are also signals of a need for more energy—in this case, the energy necessary to overcome adversity.[14] When you are energized, even a dangerous situation can be at least tolerable. In addition, stress often is a stimulus for eating poorly, as we shall see in later chapters. And depression that is characterized by elevated tension as well as low energy is clearly associated with eating problems, including bulimia and other kinds of bingeing.[15]

Tension is important to eating in another way. When we diet and try to avoid eating a tempting food, a small amount of tension results. In biological terms, tension is a basic part of inhibitory and cautious behaviors (we sometimes speak of a bodily "stop system").[16] It is an indication in our consciousness that we must be on guard. Dieting requires vigilance—both to withstand the craving for good-tasting but unnecessary food and to manage your lifestyle in such a way as to continue the diet. I will deal with these ideas much more fully in later chapters, but from these points I aim to establish my argument that both tension and energy are important elements of mood and that we often use food to achieve a positive mood.

## A Personal Example of How Moods Cause Overeating

A while ago I went to the airport to pick up my daughter Kara, who was flying into Los Angeles from northern California. It was about 5:00 P.M., and I had eaten a late lunch—light but nutritious. As I watched the flight information board, a message appeared that her plane had been diverted. Anxiety immediately gripped me. The gate attendant told the people waiting that the plane had to make an unscheduled landing in Fresno, but she assured us that it must be only a minor problem. Regardless of what she said, these were anxious moments for me and the dozens of other

people who were waiting for loved ones on the plane. Thirty minutes later we learned that there had been a medical emergency and that the plane landed briefly to let off a passenger. We were assured that the plane had taken off again and would be there shortly.

As I relaxed some of my concerns, I felt slightly drained (low energy) and suddenly noticed I was hungry. The convenience stand nearby caught my eye with its rows of candy bars neatly lined up. I bought a Snickers and a Diet Coke and consumed them with pleasure. Generally, I avoid excessive sugar and fat, and I try to keep my intake of caffeine to a small amount. This time I wanted the sugar and the caffeine because I knew it would counteract the unpleasant drained and tense feeling and make me feel better for my daughter's arrival. As I made a decision to buy the candy and soda, I thought about the fact that I didn't really need them, but I quickly rationalized the matter with some vague excuse about deserving it.

When I thought about this incident later, it was clear that when I first saw the sign about the plane being diverted, I wasn't hungry at all. I was too anxious. But when the worst was over, and there was still a little tension mixed with a drained or low energy feeling, my desire for sugar and caffeine overcame my normal inhibitions against eating these things. My indulgence was a way of regulating my mood, albeit a temporary one. Incidentally, the relationship between different intensities of mood and eating in this example is instructive for self-understanding: high anxiety or tension often reduces eating, but low-level anxiety, particularly tension combined with low energy, often increases it.[17] Knowing this can enable you to understand and get control over many unwanted food urges.

## How We Regulate Our Energy

In our daily lives we control and self-regulate our energy in many different ways. Dead-tired in the morning, we still get up and move around, and through this physical activity we feel more energetic. Activity wakes us up, and it is a kind of self-regulation. Or we use a substance like coffee to energize ourselves. Snacking is another way that we control our energy from moment to moment. We eat to regulate ourselves, both to counteract our negative moods and to keep ourselves going, to keep ourselves alert and energetic. And sometimes we eat to make ourselves feel good, even though we don't feel particularly bad at the time.

Consider an example in which you are sitting at home watching television. The program is boring, and you find yourself getting tired. But it isn't time for bed yet, so your thoughts turn to the Oreos in the kitchen. Your energy surges slightly as you think how good they would taste. This is a conditioned reaction, learned from snacking in the past. But you don't succumb immediately. Perhaps you turn again to the boring program. Then the thoughts return, and eventually you go into the kitchen with a resolve to eat just one cookie. But, the single cookie activates your taste for more, and since you already have overcome your resolve to avoid the sweets, you eat several.[18] (It is hard to stop at just one cookie, and the conditioning is so strong that many people can't stop before they've eaten a whole box.)[19] What I am talking about here are momentary impulses that really have to do with subtle changes in your energy and tension levels. These short-term feelings or moods can control us if we aren't careful. Understanding the way they operate is crucial to gaining self-control.

## Self-Control

If we could feel better in some other, more healthy, way than eating junk food, we wouldn't eat unnecessarily.[20] The management of unwanted urges to eat is really a matter of controlling our negative moods, especially the momentary ones. If you think of the cause of overeating in this way, it becomes obvious that becoming aware of the subtle influences of our negative moods, and changing them, can correct our overeating. Scientists have discovered lots of reasons for overeating and obesity, but in my view mood is a vital link.

Can overeating be controlled so it isn't a life-long problem? The answer is yes. Awareness of what is happening, and that means understanding the way our moods control our eating habits, is much of the battle. When food is no longer used as a mood regulator, then normal appetite will regulate our intake. When our physical resources decline and we need sustenance, we become hungry. When we have had enough food for the immediate demands of our body, we stop eating. It's a marvelous system that our biology provides. Evolution has honed our bodies into smooth-running systems. Appetite isn't our enemy. It tells us exactly what we need.

Negative moods tell us what we need as well. But they tell us that we need energy. This reaction is probably honed over eons from a precarious

environment of predators and inadequate food supplies. Our ancestors had to react appropriately or they didn't survive, and negative moods represented important information in that survival process. We are the descendants of the survivors. Because food is the most easily obtainable source of energy, we often turn to it. Thus, the motivation to eat when our moods are low is perfectly understandable. Take negative moods away and normal bodily needs govern our appetite and the amount that we eat. It seems too simple, but it is true.

In the pages that follow, we will examine negative moods, including when they motivate overeating and when they do not. And we will see what can be done to manage the negative moods that impel us to eat. We explore how positive or optimal moods can be maintained, and how these states lead not only to healthy reactions to food but to a host of other ingredients of a pleasurable life.

## Mood and Lack of Exercise

Why we overeat is a main theme of this book. Another important theme is why we don't exercise enough. And as we will see, our moods once again have a fundamental motivational role, in this case leading to the tendency to avoid physical activity. So the same moods that drive us to overeat inhibit the very exercise that we need to prevent overweight. And the process of self-regulation of moods that we understand in relation to overeating applies as well to lack of exercise. But the predominant mood states that often result in overeating, including stress reactions and depression, involve lack of energy and tension, and these states motivate us in the short run to remain inactive, to rest, or to sleep.

We will see that this tendency to become inactive when we feel depressed is ironic because one of the very best ways of counteracting depression is to exercise. In the pages that follow we will examine some of the reasons why moods inhibit exercise and also how our understanding of this tendency can be used to counteract the tendency to be inactive.

## A Look Ahead

In the next chapter I will examine the problem of overeating and unhealthy weight. As we will see, millions of people in our society are

engaged on a daily basis in the struggle to control their weight. It has become a national obsession, and a battle we seem to be losing. Why? I will argue that certain conditions in our society create mood states that motivate many of us to eat unnecessarily. Developing trends, especially in the past twenty or thirty years, determine these tendencies for overweight and indolence. In the third chapter I will deal with the way exercise affects eating, overweight, and mood, and also with the question of why people aren't exercising more.

Chapters 4 and 5 will carefully examine the now abundant scientific studies of how moods cause overeating. In these chapters we will also consider the subtle relationship between exercise and eating, including the often competing pleasure and energy functions that the two provide. The next three chapters will be a more complete examination of moods—how they work, what causes them, and the underlying biology. Finally, we will consider some ways of managing moods and thus how to deal with the problems of overeating and lack of exercise.

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CHAPTER 2

# *Living in a Stressful World*

## *Mood and Overweight*

OBESITY HAS BECOME a national problem. The statistics on this matter are clear: we are becoming a nation of fatties. This change has been especially evident since the 1980s. Although the experts don't agree on the reason for the overeating and overweight, it is clear that basic issues of food, mood, and lack of exercise extend throughout society. A wider lens focusing on societal trends that may affect eating and exercise can illustrate many of the principles touched on in Chapter 1, here applied to millions of people.

Two trends that might be contributing to overweight and lack of exercise are stress and depression, both on the upswing. Before reviewing these trends, let's pause to determine whether overweight is really a concern throughout society—or just a hype that sells books and newspapers.

### Is Overweight a Society-Wide Problem?

Some suggest that descriptions of increasing obesity are exaggerated, but the fact is that between half and two-thirds of American adults report being overweight in poll after poll, and these figures have been creeping up in recent years.[1] Systematic telephone surveys by the Center for Disease Control and Prevention found that obesity (defined as 30 percent above ideal body weight) increased by almost 50 percent between 1991 and 1998.[2] If anything, these figures underestimate the prevalence of obesity, because most people believe (or report) their weight to be lower

than it actually is. Look around and see how many people appear overweight and you can begin to sense the truth about obesity.

These statistics are astounding. Obesity increased in both men and women in all age groups—and since those between the ages of eighteen to twenty-nine gained the most, it isn't just that the population is aging. Some of the greatest increases showed up among those with more education. States in the Mid- and South Atlantic region marked the largest change, but the obesity epidemic is apparent throughout the country. And the weight gains occurred with no substantial change in physical activity.

The rise in obesity itself no doubt contributes to many people's excessive concerns about their weight. In one *Psychology Today* survey of readers, 24 percent of women said they would sacrifice more than three years of their lives to be the weight they want![3] Earlier surveys by the same magazine did not show this degree of distress about weight. Other people have stopped being concerned about their increasing weight, arguing heredity—as though they have no personal responsibility because their genes completely determine their weight.[4] This is a misreading of the scientific evidence about our genetic endowment. While our genetic background can create a *predisposition* for easy weight gain,[5] this only means that some people must be especially vigilant about how much they eat and exercise. It does not mean that they definitely will be overweight.[6] In any event, our collective genetic background is not changing so dramatically as to account for the changes in obesity observed in the last two decades. If these changes are in fact occurring, something else must be propelling them.

Is it possible that people are incorrectly perceiving their degree of overweight, and that the percentage of obese people has not grown much? Could it just be a neurotic society-wide preoccupation? Alas, the answer is no. The larger trend is unmistakable. One of our most authoritative scientific journals, *Science*, recently devoted extensive scientific analyses to the problem of overweight, and the conclusions by highly respected scientists made it clear that Americans have been gaining weight steadily in the last twenty years or so.[7] This weight increase has alarmed many health professionals. Former U.S. Surgeon General C. Everett Koop, for example, declared an epidemic of obesity not just in the United States but around the world as well.[8]

Back in the 1950s the well-known Metropolitan Life Insurance Com-