CHAPTER 5

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Some years back, my father went for his annual physical, and his doctor told him, as the doctor did each year, that he had to stop smoking. As usual, my father told his doctor that he would stop when he was ready. He had already tried several times and had been unsuccessful. My father had begun smoking at age 14, long before the health risks of smoking were known, and it was now an integrated part of his lifestyle, which included a couple of cocktails before a dinner high in fat and cholesterol and a hectic life that provided few opportunities for regular exercise. Smoking was part of who he was. His doctor then said, "Let me put it this way. If you expect to see your daughter graduate from college, stop smoking *now*."

That warning did the trick. My father threw his cigarettes in the wastebasket and never had another one. Over the years, as he read more about health, he began to change his lifestyle in other ways. He began to swim regularly for exercise, and he pared down his diet to one of mostly fish, chicken, vegetables, fruit, and cereal. Despite the fact that he once had many of the risk factors for early heart disease, he lived to age 83.

CHARACTERISTICS OF HEALTH-COMPROMISING BEHAVIORS

In this chapter, we address health-compromising behaviors—behaviors practiced by people that undermine or harm their current or future health. My father's problems with stopping smoking illustrate several important points about these behaviors. Many health-compromising behaviors are habitual, and several, including smoking, are addictive, making them very difficult habits to break. On the other hand, with proper interventions, even the most intractable health habit can be modified. When a person succeeds in changing a poor health behavior, often he or she will make other healthy lifestyle changes. The end result is that risk declines, and a disease-free middle and old age becomes a possibility.

Many health-compromising behaviors share several additional important characteristics. First, there is a window of vulnerability in adolescence. Behaviors such as drinking to excess, smoking, using illicit drugs, practicing unsafe sex, and taking risks that can lead to accidents or early death all begin in early adolescence and sometimes cluster together as part of a problem behavior syndrome (Donovan & Jessor, 1985; Lam, Stewart, & Ho, 2001). In the past, adolescent boys were more at risk of falling into these patterns, but girls are catching up (Mahalik et al., 2013). Not all health-compromising behaviors develop during adolescence; obesity, for example, can begin early in childhood. Nonetheless, there is an unnerving similarity in the factors that elicit and maintain many health-compromising behaviors.

Many of these behaviors are tied to the peer culture, as children learn from and imitate their peers, especially the male peers they like and admire (Bricker et al., 2009; Gaughan, 2006). Wanting to be attractive to others becomes very important in adolescence, and this factor is significant in the development of eating disorders, alcohol consumption, tobacco and drug use, tanning, unsafe sexual encounters, and vulnerability to injury (Shadel, Niaura, & Abrams, 2004). Exposure to peers' risky behavior, such as unsafe driving, increases risk-taking (Simons-Morton et al., 2014).

Many of these behaviors are pleasurable, enhancing the adolescent's ability to cope with stressful situations, and some represent thrill seeking, which can be rewarding in its own right. However, each of these behaviors is also dangerous. Each has been tied to at least one major cause of death, and several, especially smoking and obesity, are risk factors for more than one major chronic disease. Adolescents who slip into these patterns are less likely to practice good health habits and use leisure time for exercise in midlife, setting the stage for an unhealthy middle and older age (Wichstrøm, von Soest, & Kvalem, 2013).

Third, these behaviors develop gradually, as the person is exposed to the behavior, experiments with it, and later engages in it regularly. As such, many health-compromising behaviors are acquired through a process that makes different interventions important at the different stages of vulnerability, experimentation, and regular use.

Fourth, substance abuse of all kinds, whether cigarettes, food, alcohol, drugs, or health-compromising sexual behavior, are predicted by some of the same factors (Peltzer, 2010). Adolescents who get involved in risky behaviors often have conflict with their parents (Cooper, Wood, Orcutt, & Albino, 2003). Adolescents with a penchant for deviant behavior and with low self-esteem also show these behaviors (Duncan, Duncan, Strycker, & Chaumeton, 2002). Adolescents who try to combine long hours of employment with school have an increased risk of alcohol, cigarette, and marijuana abuse (Johnson, 2004). Adolescents who abuse substances typically do poorly in school; family problems,

deviance, and low self-esteem appear to explain this relationship (Andrews & Duncan, 1997). Reaching puberty early (van Jaarsveld, Fidler, Simon, & Wardle, 2007), and having a low IQ, a difficult temperament, and deviance-tolerant attitudes predict poor health behaviors (Repetti, Taylor, & Seeman, 2002). Good self control diminishes and poor self-regulation facilitates vulnerability to substance use (Wills et al., 2013). But co-occurring mental health disorders, such as depression or anxiety, may fuel these problem behaviors and make them harder to treat (Vannucci et al., 2014).

A particular dilemma is that many of these behaviors—drinking or cigarette smoking, for example—may start out as experiments but smoking, drugs, excessive alcohol consumption, and compulsive eating can become addictions. There may be common brain circuitry for all these seemingly different behaviors, especially the circuitry that controls reward and pleasure/pain (Salamone & Correa, 2013; Smith & Robbins, 2013; Stice, Yokum, & Burger, 2013).

Finally, problem behaviors, including obesity, smoking, and alcoholism, are more common in the lower social classes (Fradklin et al., 2015). Lower-class children and adolescents are exposed more to problem behaviors and may use these behaviors to cope with the stressors of low social class (Novak, Ahlgren, & Hammarstrom, 2007). Practice of these health-compromising behaviors are one reason that social class is so strongly related to most causes of disease and death (Adler & Stewart, 2010).

OBESITY

What Is Obesity?

Obesity is an excessive accumulation of body fat. Generally, fat should constitute about 20–27 percent of body tissue in women and about 15–22 percent in men. Table 5.1 presents guidelines from the National Institutes of Health for calculating your body mass index and determining whether you are overweight or obese.

The World Health Organization estimates that 600 million people worldwide are obese and 1.9 billion are overweight, including 42 million children under age 5 (World Health Organization, January 2015). Obesity is now so common that it has replaced malnutrition as the most prevalent dietary contributor to poor health worldwide (Kopelman, 2000), and it will soon account for more diseases and deaths in the United States than smoking.

The obesity problem is most severe in the United States. Americans are the fattest people in the world. At present, 68 percent of the adult U.S. population is overweight, and about 34 percent is obese (Ogden, Carroll, Kit, & Flegal, 2012), with women and older adults somewhat more likely to be overweight or obese than men and younger adults (Fakhouri, Ogden, Carroll, Kit, & Flegal, 2012) (Figure 5.1). Although obesity levels have begun to level off, the trend has not yet reversed (Kaplan, 2014).

There is no mystery why people in the United States have become so heavy. The average American's food intake rose from 1,826 calories a day in the 1970s to more than 2,000 by the mid-1990s (O'Connor, 2004, February 6). Soda consumption has skyrocketed from 22.2 gallons to 56 gallons per person per year (Ervin, Kit, Carroll, & Ogden, 2012). Portion sizes at meals have increased substantially over the past 20 years (Nielsen & Popkin, 2003). Muffins that weighed 1.5 ounces in 1957 now average half a pound each (Raeburn, Forster, Foust, & Brady, 2002, October 21). Snacking has increased more than 60 percent over the last three decades (Critser, 2003), and easy access to food through microwave ovens and fast food restaurants contributes to the increase. The average American weight gain over the past 20 years is the caloric equivalent of only three Oreo cookies or one can of soda a day (Critser, 2003), so it does not take vast quantities of food or sugary drinks to gain weight.

Risks of Obesity Obesity is a risk factor for many disorders. It contributes to death rates for all cancers and for the specific cancers of the colon, rectum, liver, gallbladder, pancreas, kidney, and esophagus, as well as non-Hodgkin's lymphoma and multiple myeloma. Estimates are that excess weight may account for 14 percent of all deaths from cancer in men and 20 percent of all deaths from cancer in women (Calle, Rodriguez, Walker-Thurmond, & Thun, 2003). Obesity also contributes substantially to deaths from cardiovascular disease (Flegal, Graubard, Williamson, & Gail, 2007), and it is tied to atherosclerosis, hypertension, Type II diabetes, and heart failure (Kerns, Rosenberg, & Otis, 2002). Obesity increases risks in surgery, anesthesia administration, and childbearing (Brownell & Wadden, 1992). It has been tied to poorer cognitive skills as early as adolescence, well in advance of any diagnosable chronic health condition (Hawkins, Gunstad, Calvo, & Spitznagel, 2016).

TABLE 5.1 | Body Mass Index Table

	Normal						Overweight					Obese					
BMI	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**
Height (inches)	**Body Weight (pounds)**																
58	91	96	100	105	110	115	119	124	129	134	138	143	148	153	158	162	167
59	94	99	104	109	114	119	124	128	133	138	143	148	153	158	163	168	173
60	97	102	107	112	118	123	128	133	138	143	148	153	158	163	168	174	179
61	100	106	111	116	122	127	132	137	143	148	153	158	164	169	174	180	185
62	104	109	115	120	126	131	136	142	147	153	158	164	169	175	180	186	191
63	107	113	118	124	130	135	141	146	152	158	163	169	175	180	186	191	197
64	110	116	122	128	134	140	145	151	157	163	169	174	180	186	192	197	204
65	114	120	126	132	138	144	150	156	162	168	174	180	186	192	198	204	210
66	118	124	130	136	142	148	155	161	167	173	179	186	192	198	204	210	216
67	121	127	134	140	146	153	159	166	172	178	185	191	198	204	211	217	223
68	125	131	138	144	151	158	164	171	177	184	190	197	203	210	216	223	230
69	128	135	142	149	155	162	169	176	182	189	196	203	209	216	223	230	236
70	132	139	146	153	160	167	174	181	188	195	202	209	216	222	229	236	243
71	136	143	150	157	165	172	179	186	193	200	208	215	222	229	236	243	250
72	140	147	154	162	169	177	184	191	199	206	213	221	228	235	242	250	258
73	144	151	159	166	174	182	189	197	204	212	219	227	235	242	250	257	265
74	148	155	163	171	179	186	194	202	210	218	225	233	241	249	256	264	272
75	152	160	168	176	184	192	200	208	216	224	232	240	248	256	264	272	279
76	156	164	172	180	189	197	205	213	221	230	238	246	254	263	271	279	287

Source: National Heart, Lung & Blood Institute, 2004.

Obesity is a chief cause of disability. The number of people age 30–49 who are too heavy to care for themselves or perform routine household tasks has jumped by 50 percent. This increase bodes poorly for the future. People who are disabled in their 30s and 40s are more likely to have health care expenses and to need nursing home care in older age, if they live that long (Richardson, 2004, January 9). Being obese also reduces the likelihood that a person will exercise, and lack of exercise increases obesity; yet obesity and lack of exercise appear to exert independent adverse effects on health, leading to greater risks than either risk factor alone (Hu et al., 2004). One in four people over 50 is obese, and as the population ages, the numbers of people who will have difficulty performing the basic tasks of daily living, such as bathing, dressing, or even walking, will be substantial (Facts of Life, December, 2004). Obesity is tied to poor cognitive functioning as well (Verstynen et al., 2012).

Obesity is associated with early mortality (Adams et al., 2006). People who are overweight at age 40 die, on average, 3 years earlier than people who are thin (Peeters et al., 2003). Abdominally localized fat, as opposed to excessive fat in the hips, buttocks, or thighs, is an especially potent risk factor for cardiovascular disease, diabetes, hypertension, cancer, and decline in cognitive function (Dore, Elias, Robbins, Budge, & Elias, 2008). People with excessive abdominal weight (sometimes called "apples," in contrast to "pears," who carry their weight on their hips) are more psychologically and physiologically reactive to stress (Epel et al., 2000). Fat tissue produces proinflammatory cytokines, which may exacerbate diseases related to inflammatory processes (see Chapter 2). Box 5.1 explores the biological regulation more fully.

Often ignored among the risks of obesity is the psychological distress that can result. Although there is a robust stereotype of overweight people as "jolly," studies suggest that the obese are prone to neuroticism and psychiatric conditions, especially depression (Sutin et al., 2013; Toups et al., 2013).

There are social and economic consequences of obesity as well. An obese person may have to pay for two seats on an airplane, have difficulty finding clothes, endure derision and rude comments, and experience other reminders that the obese, quite literally,

Obese				Extreme Obesity														
36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
Body Weight (pounds)																		
172	177	181	186	191	196	201	205	210	215	220	224	229	234	239	244	248	253	258
178	183	188	193	198	203	208	212	217	222	227	232	237	242	247	252	257	262	267
184	189	194	199	204	209	215	220	225	230	235	240	245	250	255	261	266	271	276
190	195	201	206	211	217	222	227	232	238	243	248	254	259	264	269	275	280	285
196	202	207	213	218	224	229	235	240	246	251	256	262	267	273	278	284	289	295
203	208	214	220	225	231	237	242	248	254	259	265	270	278	282	287	293	299	304
209	215	221	227	232	238	244	250	256	262	267	273	279	285	291	296	302	308	314
216	222	228	234	240	246	252	258	264	270	276	282	288	294	300	306	312	318	324
223	229	235	241	247	253	260	266	272	278	284	291	297	303	309	315	322	328	334
230	236	242	249	255	261	268	274	280	287	293	299	306	312	319	325	331	338	344
236	243	249	256	262	269	276	282	289	295	302	308	315	322	328	335	341	348	354
243	250	257	263	270	277	284	291	297	304	311	318	324	331	338	345	351	358	365
250	257	264	271	278	285	292	299	306	313	320	327	334	341	348	355	362	369	376
257	265	272	279	286	293	301	308	315	322	329	338	343	351	358	365	372	379	386
265	272	279	287	294	302	309	316	324	331	338	346	353	361	368	375	383	390	397
272	280	288	295	302	310	318	325	333	340	348	355	363	371	378	386	393	401	408
280	287	295	303	311	319	326	334	342	350	358	365	373	381	389	396	404	412	420
287	295	303	311	319	327	335	343	351	359	367	375	383	391	399	407	415	423	431
295	304	312	320	328	336	344	353	361	369	377	385	394	402	410	418	426	435	443

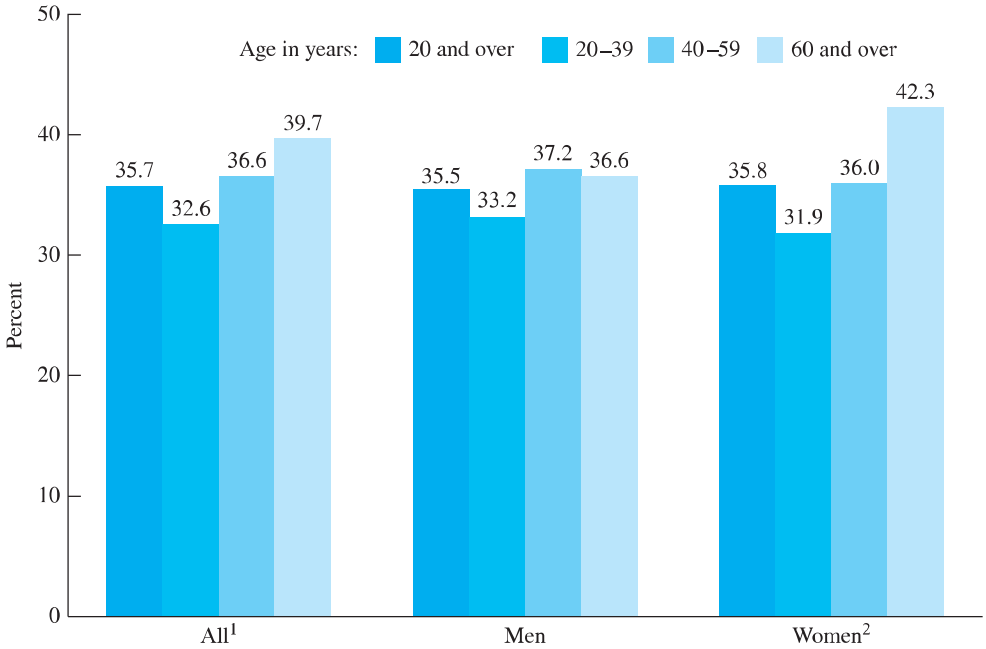
do not fit. Obesity is stigmatized as a disability whose fault lies squarely with the obese person (Puhl, Schwartz, & Brownell, 2005; Wang, Houshyar, & Prinstein, 2006). Even health care providers may hold these stereotypes. One woman reported that her physician told her "I was too fat for a proper exam and to come back when I'd lost 50 pounds" (Center for the Advancement of Health, 2008). The resulting effect of repeated exposure to others' judgments about their weight can be heightened biological responses to stress (Tomiyama et al., 2014), social alienation, and low self-esteem. As a result, obese people sometimes become reclusive, and one consequence is that diabetes, heart disease, and other complications of obesity may be far advanced by the time they seek a physician. Positive media portrayals of overweight and obese people can go some distance to mitigate the stigma (Brochu, Pearl, Puhl, & Brownell, 2014).

Obesity in Childhood

In the United States, approximately 42 million children under 5 are overweight or obese (World Health Organization, 2016). Nearly two-thirds of overweight and obese children already have risk factors for cardiovascular disease, such as elevated blood pressure, elevated lipid levels, or hyperinsulemia (Sinha et al., 2002). African American and Hispanic children and adolescents are at particular risk. For the first time in over 200 years, the current generation of children has a shorter life expectancy than their parents due to high rates of obesity (Belluck, 2005, March 17).

What causes the high rates of obesity in childhood? There are genetic contributors to obesity, which combine with risks conferred by low SES, increasing overall risk to be obese (Dinescu, Horn, Duncan, & Turkheimer, 2016). The impact of genetics on weight may be exerted in part by a vigorous feeding style that is evident early in life. There are also genetically based tendencies to store energy as fat rather than lean tissue. Another important factor is sedentary lifestyles, involving television, video games, and the Internet. Consumption of snacks and sugary drinks during the sedentary activities greatly increase the risks associated with obesity (Ervin & Ogden, 2013). Sugary drinks alone have been tied to 25,000 deaths per year in the U.S. and 180,000 worldwide in

FIGURE 5.1 | Percentage of Population Overweight and Obese Overweight is BMI over 25 and obese is BMI over 30. (*Source:* Centers for Disease Control and Prevention, 2011c)



[1]Significant increasing linear trend by age ($p < 0.01$).
[2]Significant increasing linear trend by age ($p < 0.001$).
Note: Estimates were age adjusted by the direct method to the 2000 U.S. Census population using the age groups 20–39, 40–59, and 60 and over.

More than one-third of the adult population in the United States is overweight, putting them at risk for heart disease, kidney disease, hypertension, diabetes, and other health problems.

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The Biological Regulation of Eating — BOX 5.1

All animals, including humans, have sensitive and complex systems for regulating food. Taste has been called the chemical gatekeeper of eating. It is an ancient sensory system and plays an important role in selecting certain foods and rejecting others.

An important player in weight control is the protein leptin, which is secreted by fat cells. Leptin signals the neurons of the hypothalamus as to whether the body has sufficient energy stores of fat or whether it needs additional energy. The brain's eating control center reacts to the signals sent from the hypothalamus to increase or decrease appetite. Leptin inhibits the neurons that stimulate appetite and activates those that suppress appetite. As such, it holds promise as a target for interventions (Morton, Cummings, Baskin, Barsh, & Schwartz, 2006).

Ghrelin may play a role in why dieters who lose weight often gain it back so quickly. Ghrelin is secreted by specialized cells in the stomach, spiking just before meals and dropping afterward. When people are given ghrelin injections, they feel extremely hungry. Therefore, blocking ghrelin levels or the action of ghrelin may help people lose weight and keep it off (Grady, 2002, May 23).

adulthood, due to a practice that typically begins in childhood (Healy, July 15, 2015).

Children are less likely to be obese if they participate in organized sports or physical activity, but obese children may come from families that do not value or do not have access to exercise facilities (Kozo et al., 2012; Veitch et al., 2011). Children who take in too many calories in infancy and childhood are more likely to become obese adults (Kuhl et al., 2014). Even the family dog is more likely to be overweight in families with large portion sizes and low activity levels. By contrast, positive parenting can mitigate poorly controlled eating in children (Connell & Francis, 2014). Figure 5.2 illustrates the high rates of obesity among children.

Obesity depends on both the number and the size of an individual's fat cells. Among moderately obese people, fat cells are typically large, but there is not an unusual number of them. Among the severely obese, there is a large number of fat cells, and the fat cells themselves are exceptionally large (Brownell, 1982). Childhood constitutes a window of vulnerability for obesity because the number of fat cells a person has is typically determined in the first few years of life, by genetic factors and by early eating habits.

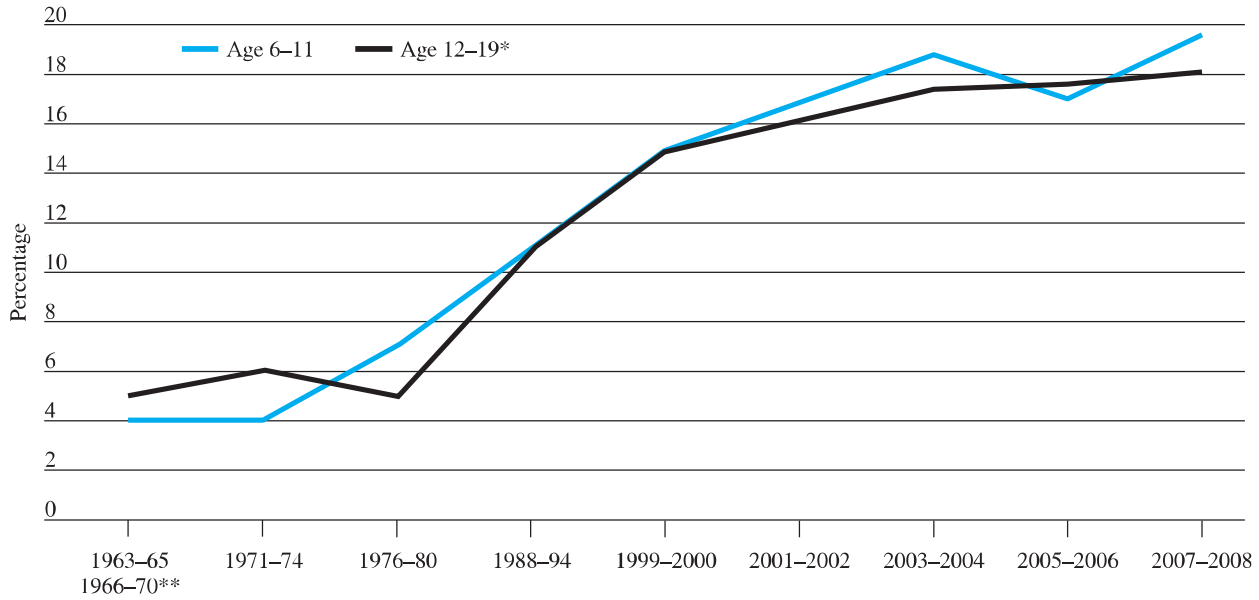
SES, Culture, and Obesity

Additional risk factors for obesity include social class and culture (Gallo et al., 2012). In the United States, women of low socioeconomic status are heavier than high-SES women, and African American women, in particular, are more likely to be obese (Ogden, Lamb, Carroll, & Flegal, 2010). For reasons that remain unclear, the prevalence of obesity among men is not related to SES. Obesity, thus, may be part of the accumulating disadvantage that women of low SES experience over the lifespan (Zajacova & Burgard, 2010). Values are implicated in obesity. Thinness is valued in women from high-SES levels and from developed countries, which in turn leads to a cultural emphasis on weight control and physical activity (Wardle et al., 2004).

Depression and weight gain are linked. People who are depressed are more likely to gain weight, and people who are obese or overweight are more likely to be depressed (Kubzansky, Gilthorpe, & Goodman, 2012; van Reedt Dortland, Giltay, van Veen, Zitman, & Penninx, 2013). People who are high in neuroticism, extraversion, and impulsivity and low in conscientiousness are more likely to be obese (Sutin, Ferrucci, Zonderman, & Terracciano, 2011).

Obesity spreads through social networks, almost like an epidemic. A person's chances of becoming obese increase substantially when he or she has a friend, sibling, or partner who has become obese. It may be that obesity changes the social norms associated with obesity, making it more acceptable to become obese (Christakis & Fowler, 2007). Most people seem unaware of the social influences on their eating (Spanos, Vartanian, Herman, & Polivy, 2014).

FIGURE 5.2 | Percentage of Young People Who Are Overweight Overweight is defined as greater than or equal to the 95th percentile of the age- and sex-specific BMI. (*Source:* National Center for Health Statistics, 2010a)



*Excludes pregnant women starting with 1971–74. Pregnancy status not available for 1963–65 and 1966–70.
**Data for 1963–65 are for children 6–11 years of age; data for 1966–70 are for adolescents 12–17 years of age, not 12–19 years.

Obesity and Dieting as Risk Factors for Obesity

Obesity is a risk factor for becoming even more so. Many obese people have a high basal insulin level, which promotes overeating due to increased hunger. Moreover, the obese have large fat cells, which have a greater capacity for producing and storing fat than do small fat cells.

Dieting contributes to the propensity for obesity. Successive cycles of dieting and weight gain, so-called **yo-yo dieting,** enhance the efficiency of food use and lower the metabolic rate (Bouchard, 2002). When

Obesity in childhood is one of the fastest growing health concerns in the United States.

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dieters begin to eat normally again, their metabolic rate may stay low, and it can become easier for them to put on weight again even though they eat less food.

Set Point Theory of Weight Evidence has accumulated for a **set point theory of weight:** the idea that each individual has an ideal biological weight, which cannot be greatly modified (Garner & Wooley, 1991). According to the theory, the set point acts like a thermostat regulating heat in a home. A person eats if his or her weight gets too low and stops eating as the weight reaches its ideal point. Some people have a higher set point than others, leading to a risk for obesity (Brownell, 1982). The theory argues that efforts to lose weight may be compensated for by adjustments in energy expenditure, as the body actively attempts to return to its original weight. This theory applies to obese people too. Once obesity is established, it is often stamped in, and the body will defend against efforts to lose weight (Healy, 2015).

Stress and Eating

Stress affects eating, although in different ways for different people. About half of people eat more when they are under stress, and half eat less (Willenbring, Levine, & Morley, 1986). For nondieting and nonobese normal eaters, stress or anxiety may suppress physiological cues of hunger, leading to lower consumption of food. For overweight and obese people, however, stress and anxiety can disinhibit food consumption, removing the self-control that usually guards against eating (Sinha & Jastreboff, 2013). Whereas men tend to eat less in stressful circumstances, many women eat more (Grunberg & Straub, 1992). Stress also influences what food is consumed. People who eat in response to stress usually consume more low-calorie and salty foods, although when not under stress, stress eaters show a preference for high-calorie foods (Willenbring et al., 1986).

Anxiety and depression figure into **stress eating** as well. One study found that stress eaters experience greater fluctuations in anxiety and depression than do nonstress eaters. Overweight people also have greater fluctuations in anxiety, hostility, and depression than do normal individuals (Lingsweiler, Crowther, & Stephens, 1987). People who eat in response to negative emotions show a preference for sweet and high-fat foods (Oliver, Wardle, & Gibson, 2000). These "comfort foods," however, do not actually lift moods (Wagner, Ahlstrom, Redden, Vickers, & Mann, 2014).

Interventions

More people are treated for obesity in the United States than for all other health habits or conditions combined. More than half a million people attend weight-loss clinics, and Amazon.com lists more than 169,000 book titles that refer to diet or dieting. However, obesity is a very difficult condition to treat. Even initially successful weight-loss programs show a high rate of relapse.

Exercise Exercise is critical to reducing weight. It can even change the underlying propensity to gain weight; that is, exercise can help reprogram genes that influence how fat is stored, making obesity less likely (*The Economist*, July 13, 2013).

Sleep Some obese people have an altered sleep pattern, whereby they work when others are sleeping. By working when they are supposed to be asleep, their bodies become used to not expending much energy either during the day or at night, and overall fewer calories are burned (Healy, 2014).

Dieting Most weight-loss programs begin with dietary treatment. People are trained to restrict their caloric and/or carbohydrate intake. In some cases, food may be provided to the dieters to ensure that the appropriate foods are being consumed. Generally, weight loss produced through dietary methods is small and rarely maintained for long (Agras et al., 1996). In fact, as Box 5.2 shows, dieting has risks. Very low-carbohydrate or low-fat diets do the best job in helping people lose weight initially, but these diets are the hardest to maintain, and people commonly revert to their old habits. Reducing caloric intake, increasing exercise, and sticking with an eating plan over the long term are the only factors reliably related to staying slim. Beginning as early as preschool, these are the best ways to tackle obesity (Kuhl et al., 2014).

Surgery Surgical procedures represent a radical way of controlling extreme obesity. In one common surgical procedure, the stomach is literally stapled up

BOX 5.2 Don't Diet

Nearly half of all adults in the United States are trying to lose weight at any given time, and the most popular way is through dieting. Although dieting (or caloric restriction) leads to weight loss on the short term, over the long term, most people gain back at least as much or more weight that they lost when they were dieting (Mann et al., 2007). Why would dieting have exactly the opposite of its intended effects?

Health psychologist Janet Tomiyama and her colleagues set out to answer this question (Tomiyama et al., 2010). Their hypothesis was that diets fail because they increase stress and levels of the stress hormone cortisol. Both of these factors can cause weight gain. Tomiyama reasoned that the stress of monitoring one's caloric intake and restricting food consumption enhances stress and cortisol production, leading to the unexpected and paradoxical effect that dieting leads to more weight gain.

In their study, 121 young women who wanted to lose weight were assigned to one of four dieting interventions for 3 weeks. They were told either to monitor their diet (or not) and/or to restrict their calories (or not). Tomiyama provided all of the dieters with prepared food, so that everybody consumed the same number of calories.

The results showed that the women who restricted their calories (the dieters) had higher cortisol levels, and monitoring calories increased perceived stress.

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Thus, dieting seems to harm both psychological well-being and biological functioning. The stress of dieting may be one reason why diets usually fail.

If dieting does not work, what will? The answer is lifestyle change. Rather than restricting calories, changing one's diet permanently in a way that involves more fruits and vegetables, less starch (white bread, dinner rolls), and smaller portions, coupled with regular exercise will lead to sustainable weight loss. Adding exercise also helps people take off extra weight and keep it off.

to reduce its capacity to hold food, so that the overweight individual must restrict his or her intake. In another approach known as lap band surgery, an adjustable gastric band is inserted surgically around the top of the stomach to create a small pouch in the upper stomach to reduce the stomach's capacity to take in food. As with all surgeries, there are potential side effects such as gastric and intestinal distress. Consequently, this procedure is usually reserved for people who are at least 100 percent overweight, who have failed repeatedly to lose weight through other methods, and who have complicating health problems that make weight loss urgent.

Cognitive Behavioral Therapy (CBT)

Researchers now believe that the compulsive overeating that leads to obesity shares the same brain circuitry as other addictive disorders, making it a difficult problem to treat, like smoking or drug addiction (Volkow, Wang, Tomasi & Baler, 2013). Many interventions with the obese use CBT to combat maladaptive eating behavior.

Screening Some programs begin by screening applicants for their readiness to lose weight and their motivation to do so. Unsuccessful prior dieting attempts, weight lost and regained, high body dissatisfaction, and low self-esteem can all undermine weight loss efforts (Teixeira et al., 2002).

Self-Monitoring Obese clients are trained in self-monitoring, to keep careful records of what they eat, when they eat it, how much they eat, and where they eat it. This record keeping simultaneously defines the behavior, makes clients more aware of their eating patterns, and can lead to beginning efforts to lose weight (Baker & Kirschenbaum, 1998). Even online self-monitoring has been tied to weight loss (Krukowski, Harvey-Berino, Bursac,

Ashikaga, & West, 2013). Many clients are surprised to discover what, when, and how much they actually eat. Monitoring is always important for weight loss, but it becomes especially so at high-risk times, such as during the holidays, when weight gain reliably occurs (Boutelle, Kirschenbaum, Baker, & Mitchell, 1999).

Attentional Retaining People who are battling a health issue such as obesity or smoking will often show an attentional bias in favor of cues related to the issue. For example, an obese person may orient to food cues, such as appealing high-calorie foods, or a store window with rich foods (Kemps, Tiggemann, & Hollitt, 2014). Obese children whose attention goes to food may also gain weight (Werthmann et al., 2015). Attentional retaining involves breaking or at least moderating this automatic attentional bias by distracting one's self, focusing on other aspects of the environment, or even physical activity.

Stimulus Control Clients are trained to modify the stimuli in their environment that have previously elicited and maintained their overeating and to take steps to modify their food consumption. Such steps include purchasing low-calorie foods (such as raw vegetables) and limiting the high-calorie foods kept in the house. Clients are taught to confine eating to one place at particular times of day, and to develop new discriminative stimuli that will be associated with eating, for example, using a particular place setting, such as a special placemat or napkin, and to eat only when those stimuli are present. Keeping portion size modest is also important (Kerameas, Vartanian, Herman, & Polivy, 2015).

Controlling Eating The next step is to gain control over the eating process itself. For example, clients may be urged to count each mouthful of food. They may be told to put down eating utensils after every few mouthfuls until the food in their mouths is chewed and swallowed. Longer and longer delays are introduced between mouthfuls so as to encourage slow eating (which tends to reduce intake). Finally, clients are urged to savor their food—to make a conscious effort to appreciate it while they are eating. The goal is to teach the obese person to eat less and enjoy it more.

Approximately 500,000 Americans participate in organized weight-reduction programs. Many of these programs include exercise.

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Self Reinforcement Success can be supported by a positive reinforcement, such as going to a movie or making a facebook message to a friend. Developing a sense of self-control over eating is an important part of behavioral treatment of obesity and can help people overcome temptations. Succeeding in losing weight is tied to greater vitality and psychological well-being (Swencionis et al., 2013), and this can act as another source of self-reinforcement.

Controlling Self-Talk Cognitive restructuring is an important part of weight-reduction programs. As noted in Chapter 3, poor health habits can be maintained through dysfunctional monologues ("I'll never lose weight—I've tried before and failed so many times"). Participants in weight-loss programs are urged to identify the maladaptive thoughts they have regarding weight loss and to substitute positive self-instruction.

The formation of explicit implementation intentions (Luszczynska, Sobczyk, & Abraham, 2007) and a strong sense of self-efficacy—that is, the belief that one will be able to lose weight—also predicts weight loss (Warziski, Sereika, Styn, Music, & Burke, 2008). The goal of these aspects of interventions is to increase a sense of self-determination, which can enhance intrinsic motivation to continue diet modification and weight loss (Mata et al., 2009).

Adding Exercise Exercise is a critical component of any weight-loss program. As people age, increasing physical activity is essential just to maintain weight, let alone avoid gaining it (Jameson, 2004).

Stress Management Efforts to lose weight can be stressful (Tomiyama et al., 2010), and so reducing life stress can be helpful. Among the techniques that have been used are mindfulness training and acceptance and commitment theory (ACT).

Social Support Because people with strong social support are more successful at losing weight than those with little social support, most CBT programs include training in eliciting effective support from families, friends, and coworkers. Even supportive messages from a behavioral therapist over the Internet seem to help people lose weight (Oleck, 2001). Autonomy support, that is, social support that conveys the belief that the person is an autonomous, responsible agent of his/her own behavior appears to foster self regulation that can lead to more weight loss better than more directive support (Gorin, Powers, Koestner, Wing, & Raynor, 2014).

The family environment is critical for weight loss, especially for children and adolescents. Families typically eat together, and so meals, which are usually planned by one person, are consumed by all (Lytle et al., 2011; Samuel-Hodge et al., 2010). Family-based interventions have shown particular promise for modifying obesity-related health behaviors (Crespo et al., 2012; Gorin et al., 2013).

Relapse Prevention Relapse prevention techniques are incorporated into treatment programs, including matching treatments to the eating problems of particular clients, restructuring the environment to remove temptation, rehearsing high-risk situations for relapse (such as parties and holidays), and developing coping strategies to deal with high-risk situations.

Moreover, weight loss efforts can fail and lapses are likely, and so people need to be protected against their self-recrimination and tendency to let a lapse turn into a full-blown loss of control.

Weight loss programs such as these can be implemented successfully, over the Internet (Krukowski, Harvey-Berino, Bursac, Ashikaga, & West, 2013), through workplace weight loss interventions, and through commercial weight loss programs. Indeed, more than 500,000 people each week are exposed to behavioral methods to control obesity through commercial programs such as Weight Watchers and Jenny Craig.

Evaluation of Cognitive-Behavioral Weight-Loss Techniques

Cognitive-behavioral programs typically produce modest success, with weight loss of nearly 2 pounds a week for up to 20 weeks and long-term maintenance over at least 2 years (Brownell & Kramer, 1989). Programs that emphasize diet modification self-direction and exercise and include relapse prevention techniques are particularly successful (Jeffery, Hennrikus, Lando, Murray, & Liu, 2000). Interventions with children and adolescents show particularly good results when parents are involved (Kitzmann et al., 2010).

Table 5.2 describes some of the promising leads that current research suggests for enhancing long-term weight loss in cognitive-behavioral programs.

Taking a Public Health Approach

The increasing prevalence of obesity makes it evident that prevention is essential for combating this problem (Institute of Medicine, 2011d).

Prevention with families at risk for having obese children is an important strategy. Parents should be trained early to adopt sensible meal-planning and eating habits that they can convey to their children. Although obesity has proven to be very difficult to modify with adults, it is easier to teach children healthy eating and activity habits. Obese children can benefit from lifestyle interventions involving reinforcements for giving up sedentary activities like television watching, inducements to engage in sports and other physical activities, and steps to encourage healthier eating practices including avoiding or eliminating snacking (Wilfley et al., 2007). School-based interventions directed to making healthy foods available and modifying sedentary behavior will help (Dietz & Gortmaker, 2001).

The World Health Organization has argued for several changes, including food labels that contain more nutrition and serving size information, a special tax on foods that are high in sugar and fat (the so-called junk food tax), and restriction of advertising to children or required health warnings (Arnst, 2004). Some states now control the availability of junk food and sugary drinks in schools, products that have been linked directly to weight in children (Taber, Chriqui, Perna,

TABLE 5.2 | Weight-Management Tips

Increasing Awareness	Exercise
Keep track of what you eat.	Track your exercise progress: What do you enjoy doing?
Keep track of your weight.	Incorporate exercise into your lifestyle—become more active in all areas of life.
Write down when you eat and why.	**Attitudes**
While You're Eating	Think about your weight-loss goals—make them realistic.
Pace yourself—eat slowly.	Remember that any progress is beneficial and that not reaching your goal does not mean you failed.
Pay attention to your eating process.	Think about your desire for foods—manage and work through cravings.
Pay attention to how full you are.	**Working with Others**
Eat at the same place and at the same time.	Incorporate friends and family into your goals and your new lifestyle, including meal preparation and exercise routines.
Eat one portion, and serve yourself before beginning the meal.	Communicate to them what they can do to help you reach your goals.
Shopping for Food	**Nutrition**
Structure your shopping so that you know what you are buying beforehand.	Be informed about nutrition.
Limit the number of already prepared items.	Know your recommended daily intake of calories, vitamins, and minerals.
Don't shop when you are hungry.	Know which foods are good sources of vitamins, minerals, proteins, carbohydrates, and healthy fats.
The Eating Environment	Eat a balanced diet.
Make healthy foods more available than unhealthy ones.	Prepare foods that are both healthy and taste good.
Do your best to stick to your eating routine when dining out.	
Think about the limitations and possible adjustments to your eating routine before dining out or eating with other people.	

Powell, & Chaloupka, 2012). Some of these real or proposed changes in food and drink availability have led to bitter battles between food and beverage companies and state, local, and even the Federal government.

EATING DISORDERS

In pursuit of the elusive perfect body (Box 5.3), many women and an increasing number of men chronically restrict their diet and engage in other weight-loss efforts, such as laxative use, cigarette smoking, and chronic use of diet pills (Facts of Life, November 2002). Women ages 15–24 are most likely to practice these behaviors, but cases of eating disorders have been documented in people as young as 7 and as old as their mid-80s (Facts of Life, November 2002).

The epidemic of eating disorders suggests that, like obesity, the pursuit of thinness is a major public health threat. Recent years have seen an increase in the incidence of eating disorders, especially among adolescent girls. Chief among these are anorexia nervosa and bulimia. Eating disorders have some of the highest disability and mortality rates of all behavioral disorders (Park, 2007). Eating disorders result in death for about 6 percent of those who have them (Facts of Life, November 2002). Suicide attempts are not uncommon (Bulik et al., 2008). Women with eating disorders or tendencies toward them are also more likely to be depressed, anxious, and low in self-esteem and to have a poor sense of mastery.

Anorexia Nervosa

One of my most jarring memories is of driving down a street on my university campus during Christmas vacation and seeing a young woman clearly suffering from anorexia nervosa about to cross the street. She had obviously just been exercising. The wind blew her sweatpants around the thin sticks that had once been normal legs. The skin on her face was stretched so tight that the bones showed through, and I could make out her skeleton under what passed for flesh. I

BOX 5.3 The Barbie Beauty Battle

Health psychologists have criticized the media and the products they popularize for perpetuating false images of feminine beauty. The Barbie doll has come under particular criticism because its popularity with young girls may contribute to excessive dieting and the development of eating disorders. Using hip measurement as a constant, researchers have calculated that for a young, healthy woman to attain the same body proportions as the Barbie doll, she would have to increase her bust by 5 inches, her neck length by more than 3 inches, and her height by more than 2 feet while decreasing her waist by 6 inches (Brownell & Napolitano, 1995). This clearly unattainable standard may contribute to the false expectations that girls and women develop for their bodies. Consequently, Mattel, who makes Barbie dolls, has now added a curvy Barbie with proportions more similar to those of many adolescent girls (Li, 2016).

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realized that I was face-to-face with someone who was shortly going to die. I looked for a place to pull over, but by the time I had found a parking space, she had disappeared into one of the dormitories, and I could not see which one. Nor do I know what I would have said if I had caught up with her.

Anorexia nervosa is an obsessive disorder amounting to self-starvation, in which an individual diets and exercises to the point that body weight is grossly below optimum level, threatening health and potentially leading to death. Most sufferers are young women, but gay and bisexual men are also at risk (Blashill, Goshe, Robbins, Mayer, & Safren, 2014).

Developing Anorexia Nervosa Genetic factors are clearly implicated, especially genes involving the serotonin, dopamine, and estrogen systems. These systems have been implicated in both anxiety and food intake. Interactions between genetic factors and risks in the environment, such as early exposure to stress, may also play a role (Striegel-Moore & Bulik, 2007), and dysregulated biological stress systems may be involved.

Personality characteristics and family interaction patterns may be causal factors in anorexia. Anorexics may experience a lack of control coupled with a need for approval and exhibit conscientious, perfectionistic behavior. Body image distortions are also common among anorexic girls, although it is not clear whether this distortion is a consequence or a cause of the disorder. For example, these girls still see themselves as overweight when they have long since dropped below their ideal weight (Hewig et al., 2008).

Anorexic girls can come from families with psychopathology or alcoholism or from families that are extremely close but have poor skills for communicating emotion or dealing with conflict (Garfinkel & Garner, 1983; Rakoff, 1983). Mothers of daughters with eating disorders appear to be more dissatisfied with their families, more dissatisfied with their daughters' appearance, and more vulnerable to eating disorders themselves (Pike & Rodin, 1991). Mothers who are preoccupied with their own weight and eating behaviors place their daughters at risk for developing eating problems (Francis & Birch, 2005). More generally, eating disorders have been tied to insecure attachment in relationships, that is, to the expectation of criticism or rejection from others (Troisi et al., 2006). By the time a young woman or man goes into treatment for anorexia, the behavior may have become a habit that is, consequently, much harder to treat (Goode, 2015).

Treating Anorexia Initially, the chief target of therapy is to bring the patient's weight back up to a safe level, a goal that often must be undertaken in a residential treatment setting, such as a hospital. To achieve weight gain, most therapies use cognitive-behavioral approaches (Brown & Keel, 2012). However, the standard principles of cognitive behavioral therapy do not always work well with anorexics (Brown & Keel, 2012). Motivational issues are especially important, as inducing the anorexic to want to change her behavior is essential (Wilson, Grilo, & Vitousek, 2007).

Family therapy may help families learn positive methods of communicating emotion and conflict. During the early phases of treatment, parents are urged to assume control over the anorexic family member's eating, but as the anorexic family member begins to gain weight and comply with parental authority, he or she (usually she) begins to assume more control over eating (Wilson, Grilo, & Vitousek, 2007).

Because of the health risks and difficulties in treating anorexia nervosa, research has increasingly moved toward prevention. Some interventions address social norms regarding thinness directly (Neumark-Sztainer, Wall, Story, & Perry, 2003). For example, one study gave women information about other women's weight and body type, on the grounds that women who develop eating disorders often wrongly believe that other women are smaller and thinner than they actually are (Sanderson, Darley, & Messinger, 2002). The intervention succeeded in changing women's estimates of their actual and ideal weight (Mutterperl & Sanderson, 2002).

But the factors that may prevent new cases from arising may be quite different from those that lead students who already have symptoms to seek out treatment (Mann et al., 1997). One eating disorder prevention program had college freshmen meet classmates who had recovered from an eating disorder; they described their experience and provided information about the disorder. To the researchers' dismay, following the intervention, the participants had slightly more symptoms of eating disorders than those who had not participated. The program may have inadvertently normalized the problem. Consequently, ideal strategies for prevention may require stressing the health risks of eating disorders, whereas the strategies for inducing symptomatic women to seek treatment may involve normalizing the behavior and urging them to accept treatment (Mann et al., 1997).

Bulimia

Bulimia is characterized by alternating cycles of binge eating and purging through such techniques as vomiting, laxative abuse, extreme dieting or fasting, and drug or alcohol abuse. **Bingeing** appears to be caused at least in part by dieting. About half the people diagnosed with anorexia are also bulimic. Bulimia affects 1–3 percent of women (Wisniewski, Epstein, Marcus, & Kaye, 1997) and an increasing number of men (Striegel, Bedrosian, Wang, & Schwartz, 2012), and up to 10 percent of bulimics may have bingeing episodes.

Developing Bulimia Whereas many anorexics are thin, bulimics are typically of normal weight or overweight, especially through the hips. The binge phase is regarded as an out-of-control reaction of the body to restore weight, and the purge phase as an effort to regain control over weight.

Women prone to bulimia, especially binge eating, appear to have altered stress responses, especially an atypical hypothalamic-pituitary adrenal diurnal pattern (Ludescher et al., 2009). Cortisol levels, especially in response to stress, may be elevated, promoting eating (Gluck et al., 2004). Food can become a constant thought (Blechert, Feige, Joos, Zeeck, & Tuschen-Caffier, 2011). Restrained eating, then, sets the stage for a binge.

Bulimia may have a genetic basis, inasmuch as eating disorders cluster in families, and twin studies show a high concordance rate for binge eating (Wade, Bulik, Sullivan, Neale, & Kendler, 2000). Families that place a high value on thinness and appearance are also likely to have bulimic daughters (Boskind-White & White, 1983).

Physiological theories of bulimia focus on hormonal dysfunctions (Monteleone et al., 2001), low leptin functioning (Jimerson, Mantzoros, Wolfe, & Metzger, 2000), hypothalamic dysfunction, food allergies, or disordered taste responsivity (Wisniewski et al., 1997), disorder of the endogenous opioid system (Mitchell, Laine, Morley, & Levine, 1986), neurological disorder, and a combination of these.

Treating Bulimia A barrier to treating bulimia is that many women either do not believe that their problem is a serious one, or they do not believe that a medical intervention will overcome it. Accordingly, one of the first steps in treatment is to convince bulimics that the disorder threatens their health and that

interventions can help them overcome the disorder (Smalec & Klingle, 2000). When bulimia becomes compulsive, outright prevention of the behavior may be required, with the patient placed in a treatment facility. CBT has been moderately successful in treating bulimia (Mitchell, Agras, & Wonderlich, 2007), in either an individual or group setting (Katzman et al., 2010). Internet interventions may also be somewhat successful in modifying disordered eating and weight gain prevention (Stice, Durant, Rohde, & Shaw, 2014).

A combination of medication and cognitive-behavioral therapy appears to be the most effective therapy (Brown & Keel, 2012; Wilson, Grilo, et al., 2007). Typically, this treatment begins with self-monitoring, keeping a diary of eating habits, including time, place, type of food consumed, and emotions experienced. Simple self-monitoring can produce decreases in binge-purge behavior.

Most therapies combine monitoring with an individualized or group CBT program to bring eating under control (Wilson, Grilo, et al., 2007). Specific techniques include inducing the client to increase the regularity of meals, eat a greater variety of foods, delay the impulse to purge as long as possible, and eat favorite foods in new settings not previously associated with binges. Perceptions of self-efficacy facilitate the success of cognitive-behavioral interventions.

Relapse prevention techniques are often added to therapeutic programs. These include learning to identify situations that trigger binge eating and developing coping skills to avoid them. Relaxation and stress management skills are often added to these programs as well.

Binge Eating Disorder

Binge eating usually occurs when the individual is alone; it may be triggered by negative emotions produced by stressful experiences (Telch & Agras, 1996). The dieter begins to eat and then cannot stop, and although the bingeing is unpleasant, the binger feels out of control, unable to stop eating. Low self esteem is implicated in binge eating and may be a good target for prevention and treatment (Goldschmidt, Wall, Loth, Bucchianeri, & Neumark-Sztainer, 2014). Many people with binge eating disorder also have a mental health disorder, such as anxiety or depression (Kessler et al., 2013).

A related eating disorder, termed binge eating disorder, characterizes the many people who engage in recurrent binge eating but do not engage in the compensatory purging behavior to avoid weight gain (Spitzer et al., 1993).

Binge eating disorder is a health problem at least on a scale with bulimia. However, many people with the disorder do not seek or obtain treatment (Kessler et al., 2014). Binge eating increases in response to stress, and a rise in ghrelin, which controls the urge to eat, may be responsible (Gluck, Yahav, Hashim, & Geliebter, 2014). People with binge eating disorders are characterized by an excessive concern with body and weight; a preoccupation with dieting; a history of depression, psychopathology, and alcohol or drug abuse; and difficulties with managing work and social settings (Spitzer et al., 1993). Overvaluing body appearance, a larger body mass than is desired, dieting, and symptoms of depression are implicated in triggering binge episodes (Stice, Presnell, & Spangler, 2002).

ALCOHOLISM AND PROBLEM DRINKING

The Scope of the Problem

Alcohol is responsible for approximately 79,000 deaths each year, making it the third-leading cause of preventable death after tobacco and improper diet and exercise. More than 20 percent of Americans drink at levels that exceed government recommendations (Centers for Disease Control and Prevention, September 2008). About 15 million American adults meet criteria for alcohol abuse and dependence (Substance Abuse and Mental Health Services Administration, 2011).

As a health issue, alcohol consumption has been linked to high blood pressure, stroke, cirrhosis of the liver, and some forms of cancer. Excessive alcohol consumption has also been tied to brain atrophy and consequent deteriorating cognitive function (Anstey et al., 2006). Alcoholics can have sleep disorders, which, in turn, may contribute to immune alterations that elevate risk for infection (Redwine, Dang, Hall, & Irwin, 2003). Approximately 31 percent of traffic-related deaths are related to alcohol, and it is estimated that 50 percent of Americans will be involved in an alcohol-related accident during his or her lifetime (National Highway Traffic Safety Administration, 2012).

An estimated 15 percent of the national health bill goes to the treatment of alcoholism (Dorgan & Editue, 1995). Economically, the costs of alcohol abuse and

alcoholism are estimated to be approximately $249 billion per year and include the following:

- Most of the costs, 73% of the total cost, resulted from losses in the workplace
- 11% went to health care expenses to treat problems due to excessive drinking
- 10% was spent on law enforcement and criminal justice expenses
- 5% of the costs went to losses from motor vehicle crashes (Centers for Disease Control and Prevention, January 2016).

In addition to the direct costs of alcoholism through illness, accidents, and economic costs, alcohol abuse contributes to social problems. Alcohol disinhibits aggression, so homicides, suicides, and assaults occur under the influence of alcohol. Alcohol can also facilitate other risky behaviors. For example, among sexually active adults, alcohol leads to more impulsive sexuality (Weinhardt, Carey, Carey, Maisto, & Gordon, 2001) and poorer skills for negotiating condom use (Gordon, Carey, & Carey, 1997).

Overall, though, it has been difficult to define the scope of alcoholism. Many problem drinkers keep their problem successfully hidden, at least for a time. By drinking at particular times of day or at particular places, and by restricting contacts with other people during these times, the alcoholic may be able to drink without noticeable disruption in his or her daily activities.

What Is Substance Dependence?

A person is said to be dependent on a substance when he or she has repeatedly self-administered it, resulting in tolerance, withdrawal, and compulsive behavior (American Psychiatric Association, 2000). Substance dependence can include **physical dependence,** when the body has adjusted to the substance and incorporates the use of that substance into the normal functioning of the body's tissues. Physical dependence often involves **tolerance,** the process by which the body increasingly adapts to the use of a substance, requiring larger and larger doses of it to obtain the same effects, and eventually reaching a plateau. **Craving** is a strong desire to engage in a behavior or consume a substance. It results from physical dependence and from a conditioning process: As the substance is paired with environmental cues, the presence of those cues triggers an intense desire for the substance. **Addiction** occurs when a person has become physically or psychologically dependent on a substance following repeated use over time. **Withdrawal** refers to the unpleasant symptoms, both physical and psychological, that people experience when they stop using a substance on which they have become dependent. Although the symptoms vary, they include anxiety, irritability, intense cravings for the substance, nausea, headaches, tremors, and hallucinations.

Alcoholism and Problem Drinking

Problem drinking and **alcoholism** are substance dependence disorders that are defined by several specific behaviors. These patterns include the need for daily use of alcohol, the inability to cut down on drinking, repeated efforts to control drinking through temporary abstinence or restriction of alcohol to certain times of the day, binge drinking, occasional consumption of large quantities of alcohol, loss of memory while intoxicated, continued drinking despite known health problems, and drinking of nonbeverage alcohol, such as cough syrup.

The term *alcoholic* is usually reserved for someone who is physically addicted to alcohol. Alcoholics show withdrawal symptoms when they stop drinking, they have a high tolerance for alcohol, and they have little ability to control their drinking. Problem drinkers may not have these symptoms, but they may have social, psychological, and medical problems resulting from alcohol.

Physiological dependence can be manifested in stereotypic drinking patterns (particular types of alcohol in particular quantities at particular times of day), drinking that maintains blood alcohol at a particular level, the ability to function at a level that would incapacitate less tolerant drinkers, increased frequency and severity of withdrawal, early-in-the-day and middle-of-the-night drinking, a sense of loss of control over drinking, and a subjective craving for alcohol (Straus, 1988).

Origins of Alcoholism and Problem Drinking

The origins of alcoholism and problem drinking are complex. Based on twin studies and on the frequency of alcoholism in sons of alcoholic fathers, genetic factors appear to be implicated (Hutchison, McGeary, Smolen, Bryan, & Swift, 2002). Modeling a parent's drinking is also implicated (van der Zwaluw et al., 2008). Men have traditionally been at greater risk for

alcoholism than women (Robbins & Martin, 1993), although younger women and women employed outside the home are catching up (Christie-Mizell & Peralta, 2009; Williams, 2002). Sociodemographic factors, such as low income, also predict alcoholism.

Drinking and Stress Drinking occurs, in part, as an effort to buffer the impact of stress. People who have a lot of negative life events, experience chronic stressors, and have little social support are more likely to become problem drinkers than people without these problems (Brennan & Moos, 1990; Sadava & Pak, 1994). For example, alcohol abuse rises among people who have been laid off from their jobs (Catalano, Dooley, Wilson, & Hough, 1993). Alienation from work, low job autonomy, the sense that one's abilities are not being used, and lack of participation in decision making at work are associated with heavy drinking (Greenberg & Grunberg, 1995). Financial strain, especially if it produces depression, leads to drinking (Peirce, Frone, Russell, & Cooper, 1994), and a sense of powerlessness in one's life has also been related to alcohol use and abuse (Seeman, Seeman, & Budros,1988).

Many people begin drinking to enhance positive emotions and reduce negative ones (Repetto, Caldwell, & Zimmerman, 2005), and alcohol does reliably lower anxiety and depression and improve self-esteem, at least temporarily (Steele & Josephs, 1990). For many people, drinking is associated with pleasant social occasions, and people may develop a social life centered on drinking, such as going to bars or attending parties (Emslie, Hunt, & Lyons, 2013). Thus, there can be psychological rewards to drinking.

There are two windows of vulnerability for alcohol use and abuse. The first, when chemical dependence generally starts, is between the ages of 12 and 21 (DuPont, 1988). The other is in late middle age, in which problem drinking may act as a coping method for managing stress (Brennan & Moos, 1990). Late-onset problem drinkers are more likely to control their drinking on their own or be successfully treated, compared with people who have more long-term drinking problems (Moos, Brennan, & Moos, 1991).

Depression and alcoholism are linked. Alcoholism may represent untreated symptoms of depression, or depression may act as an impetus for drinking in an effort to improve mood. Accordingly, in some cases, symptoms of both disorders must be treated simultaneously (Oslin et al., 2003).

Treatment of Alcohol Abuse

As many as half of all alcoholics stop or reduce their drinking on their own (Cunningham, Lin, Ross, & Walsh, 2000). This "maturing out" of alcoholism is especially likely in the later years of life (Stall & Biernacki, 1986).

Adolescence and young adulthood represent a window of vulnerability to problem drinking and alcoholism. Successful intervention with this age group may reduce the scope of the alcoholism problem.

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After the Fall of the Berlin Wall — BOX 5.4

When the Berlin Wall came down in 1989, there were celebrations worldwide. In the midst of the jubilation, few fully anticipated the problems that might arise in its wake. Hundreds of thousands of East Germans, who had lived for decades under a totalitarian regime with a relatively poor standard of living, were now free to stream across the border into West Germany, which enjoyed prosperity, high employment rates, and a high standard of living. But for many people, the promise of new opportunities failed to materialize. Employment was less plentiful than had been assumed, and the East Germans were less qualified for the jobs that did exist. East Germans experienced more discrimination and hostility than they expected, and many migrating East Germans found themselves unemployed.

Two German researchers, Mittag and Schwarzer (1993), examined alcohol consumption among men who had found employment in West Germany and those who had remained unemployed. In addition, they measured self-efficacy with respect to coping with life's problems through such items as "When I am in trouble, I can rely on my ability to deal with the problem effectively."

The researchers found that the men with a high sense of self-efficacy were less likely to consume high levels of alcohol. The men who were unemployed and also had a low sense of self-efficacy drank more than any other group. Thus, being male, being unemployed for a long time, and not having a sense of personal agency led to heavy drinking.

Although health psychologists cannot provide jobs to the unemployed, perhaps they can empower people to develop a sense of self-efficacy. If one believes that one can control one's behavior, cope effectively with life, and solve one's problems, one may be better able to deal effectively with setbacks (Mittag & Schwarzer, 1993).

Cutting back can also be a result of learning just how much they drink, relative to other people (Taylor, Vlaev, Maltby, Brown, & Wood, 2015). In addition, alcoholism can be successfully treated. Nonetheless, as many as 60 percent of the people treated through such programs may return to alcohol abuse (Finney & Moos, 1995).

Alcoholics who are high in socioeconomic status (SES) and who are in highly socially stable environments (that is, who have regular jobs, intact families, and a circle of friends) do very well in treatment programs, achieving success rates as high as 68 percent. In contrast, alcoholics of low SES often have success rates of 18 percent or less. Without employment and social support, the prospects for recovery are dim. Box 5.4 presents an example of these problems.

Treatment Programs

For hard-core alcoholics, the first phase of treatment is **detoxification.** Because this process can produce severe symptoms and health problems, detoxification is typically conducted in a carefully supervised and monitored medical setting. Once the alcoholic has at least partly dried out, therapy is initiated. The typical program begins with a short-term, intensive inpatient treatment followed by a period of continuing treatment on an outpatient basis (NIAAA, 2000a).

Approximately 745,200 people in the United States received treatment for alcoholism in 2008 (National Institute on Drug Abuse, 2011). A self-help group, especially Alcoholics Anonymous (AA), is the most commonly sought source of help for alcohol-related problems (NIAAA, 2000a) (Box 5.5).

Cognitive-Behavioral Treatments Treatment programs for alcoholism and problem drinking typically use cognitive-behavioral therapy (CBT) to treat the biological and environmental factors involved in alcoholism simultaneously (NIAAA, 2000b). The goals of CBT are to decrease the reinforcing properties of alcohol, to teach people new behaviors inconsistent with alcohol abuse, and to modify the environment to include reinforcements for activities that do not involve alcohol. Learning coping techniques for dealing with stress and relapse prevention skills enhance the prospects for long-term maintenance.

Many CBT programs begin with a self-monitoring phase, in which the alcoholic or problem drinker charts situations that give rise to drinking. Motivational enhancement procedures are often included because the responsibility and the capacity to change rely entirely on the client (NIAAA, 2000a). Some programs also include medications for blocking the alcohol-brain interactions that may contribute to alcoholism.

BOX 5.5 A Profile of Alcoholics Anonymous

No one knows exactly when Alcoholics Anonymous (AA) began, but it is believed that the organization was formed around 1935 in Akron, Ohio. The first meetings were attended by a few acquaintances who discovered that they could remain sober by attending the services of a local religious group and sharing their problems and efforts to remain sober with other alcoholics. By 1936, weekly AA meetings were taking place around the country.

Currently, AA's membership is estimated to be more than 2 million individuals worldwide (Alcoholics Anonymous, 2015). The sole requirement for participation in AA is a desire to stop drinking. Members come from all walks of life, including all socioeconomic levels, races, cultures, sexual preferences, and ages.

Members are encouraged to immerse themselves in the culture of AA—to attend "90 meetings in 90 days." At these meetings, AA members speak about the drinking experiences that prompted them to seek out AA and what sobriety has meant to them. Time is set aside for prospective new members to talk informally with longtime members so that they can learn and imitate the coping techniques that recovered alcoholics have used.

AA has a firm policy regarding alcohol consumption. It maintains that alcoholism is a disease that can be managed but never cured. Recovery means that an individual must acknowledge that he or she has a disease, that it is incurable, and that alcohol can play no part in future life. Recovery depends completely on staying sober.

Is AA successful in getting people to stop drinking? AA's dropout rate is unknown, and success over the long term has not been measured. Moreover, because the organization keeps no membership lists (it is anonymous), it is difficult to evaluate its success. However, AA itself maintains that two out of three people have been able to stop drinking through its program, and one authorized study reported a 75 percent success rate for a New York AA chapter.

AA programs are effective for several reasons. Participation in AA is like a religious conversion experience in which a person adopts a new way of life; such experiences can be powerful in bringing about behavior change. Also, the member who shares his or her experiences develops a commitment to other members. The process of giving up alcohol contributes to a sense of emotional maturity and responsibility, helping the alcoholic accept responsibility for his or her life. AA may also provide a sense of meaning and purpose in a person's life—most chapters have a strong spiritual or religious bent and urge members to commit themselves to a power greater than themselves. In addition, the group can provide satisfying personal relationships that help people overcome the isolation that many alcoholics experience. Too, the members provide social reinforcement for each other's abstinence.

AA was one of the earliest self-help programs for people suffering from a health problem; and therefore, has provided a model for self-help organizations. Moreover, in having successfully treated alcoholics for decades, AA has demonstrated that the problem of alcoholism is not intractable.

Many treatment programs include stress management techniques that can be substituted for drinking. Drink refusal skills and the substitution of nonalcoholic beverages in high-risk social situations are also important components of CBT interventions. In some cases, family therapy and group counseling are added. The advantage of family counseling is that it eases the alcoholic's or problem drinker's transition back into his or her family (NIAAA, 2000a).

Relapse Prevention A meta-analysis of alcohol treatment outcome studies estimates that more than 50 percent of treated patients relapse within the first 3 months after treatment (NIAAA, 2000a). Accordingly, relapse prevention techniques are essential. Practicing coping skills or social skills for high-risk-for-relapse situations is a mainstay of relapse prevention interventions. In addition, the recognition that people often stop and restart an addictive behavior several times before they are successful has led to the development of techniques for managing relapses. Understanding that an occasional relapse is normal helps the problem drinker realize that any given lapse does not signify failure. Overall, the evidence shows that cognitive behavioral treatments (CBT) to treat alcohol disorders are successful across a broad range of people and situations (Magill & Ray, 2009). Interventions with heavy-drinking college students have made use of these approaches (Box 5.6).

The Drinking College Student BOX 5.6

Most U.S. college students drink alcohol, and as many as 40 percent of them are heavy drinkers (O'Malley & Johnston, 2002). Moreover, if you are a college student who drinks, the odds are 7 in 10 that you have engaged in binge drinking (Wechsler, Seibring, Liu, & Ahl, 2004) (Table 5.3).

Many colleges have tried to deal with the heavy-drinking problem by providing educational materials about the harmful effects of alcohol. However, dogmatic alcohol prevention messages may actually increase drinking (Bensley & Wu, 1991). Moreover, the information conflicts markedly with the personal experiences of many college students who find drinking in a party situation to be enjoyable. Consequently, motivating students even to attend alcohol abuse programs, much less to follow their recommendations, is difficult.

Some of the more successful efforts to modify college students' drinking have encouraged them to gain self-control over drinking rather than trying to get them to eliminate alcohol consumption altogether. Cognitive-behavioral interventions help college students gain such control. These programs begin by getting students to monitor their drinking and learn what blood alcohol levels mean and what their effects are. Often, merely monitoring drinking leads to a reduction in drinking. The program includes information about the risks of alcohol consumption, the acquisition of skills to moderate alcohol consumption, relaxation training and lifestyle rebalancing, nutritional information, aerobic exercise, relapse prevention skills designed to help students cope with high-risk situations, assertiveness training, and drink-refusal training. Changing perceptions of the drinker from a fun party guy to a loser can foster alcohol reduction and prevention programs with students (Teunissen et al., 2012). Moreover, if the student can alter his or her identity away from the prototype of the drinker, it may reduce alcohol consumption.

Many intervention programs include social skills training designed to get students to find alternative ways to relax and have fun in social situations without abusing alcohol. To gain personal control over drinking, students are taught **controlled drinking** skills. For example, one technique involves **placebo drinking,** namely consuming nonalcoholic beverages or alternating an alcoholic with a nonalcoholic beverage.

An evaluation of an 8-week training program with college students involving these components showed moderate success. Students reported significant reductions in their drinking compared with a group that received only educational materials about the adverse effects of excessive drinking. Moreover, these gains persisted over a year long follow-up period (Marlatt & George, 1988).

Lengthy interventions such as this one are expensive and time consuming, and consequently, as is the case with other health habits, efforts have gone

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TABLE 5.3 | Patterns of College Student Binge Drinking

	1999	2001
All students	44.5%	44.4%
Men	50.2	48.6
Women	39.4	40.9
Live in dormitory	44.5	45.3
Live in fraternity/sorority house	80.3	75.4

Source: Wechsler et al., 2002.

(*continued*)

BOX 5.6 The Drinking College Student (*continued*)

into finding briefer interventions that may be successful (Fried & Dunn, 2012). For example, many college students are now required to attend brief alcohol interventions incorporated into freshman orientation (e.g. DiFulvio, Linowski, Mazziotti, & Puleo, 2012).

Even online interventions have been created. AlcoholEdu® is an online alcohol prevention program used by more than 500 college and university campuses nationwide. This program is designed to challenge students' expectations about alcohol while enabling them to make healthy and safe decisions about their personal alcohol consumption.

Efforts have also focused on preventing students from getting into a heavy drinking lifestyle in the first place. For example, one intervention (Marlatt et al., 1998) employed motivational interviewing to induce students to question their drinking practices and develop goals for changing their behavior, as drinking to excess has been tied to severe behavioral consequences (see Tables 5.4 and 5.5). Over a two year follow-up, students in the intervention drank significantly less and experienced fewer of the consequences of heavy drinking.

TABLE 5.4 | Alcohol-Related Problems of College Students Who Had a Drink in the Past Year

Alcohol-Related Problem	Drinkers Who Reported Problems
Had a hangover	51.7%
Missed class	27.3
Did something you regret	32.7
Forgot where you were or what you did	24.8
Engaged in unplanned sexual activity	19.5
Got hurt or injured	9.3

Source: Wechsler et al., 2002.

TABLE 5.5 | Alcohol Use by U.S. College Students Age 18–24

Alcohol-Related Incidents per Year
Deaths: 1,825
Injuries: 599,000
Assaults: 690,000 students assaulted by student who had been drinking
Sexual abuses: 97,000 victims of alcohol-related sexual assault or date-rape
Academic problems: about 25% of students report academic consequences of their drinking (missing class, falling behind, doing poorly on exams or papers, receiving lower grades overall)
Health Problems: 150,000 students develop an alcohol-related health problem
Suicide attempts: about 1.2–1.5 percent of students indicate that they tried to commit suicide within the past year due to drinking or drug use

Source: NIAAA, December 2015.

Evaluation of Alcohol Treatment Programs

Several factors are associated with successful alcohol treatment programs: a focus on factors in the environment that elicit drinking and modifying those factors or instilling coping skills to manage them; a moderate length of participation (about 6–8 weeks); and involving relatives and employers in the treatment process. Interventions that include these components can produce up to a 40 percent treatment success rate (Center for the Advancement of Health, 2000d).

Even minimal interventions can make a dent in drinking-related problems. For example, a few sessions devoted to a discussion of problem drinking and telephone interventions have shown some success in reducing drinking (Oslin et al., 2003). Most alcoholics, though, approximately 85 percent, do not receive formal treatment. As a result, social engineering approaches such as banning alcohol advertising, raising the drinking age, and enforcing penalties for drunk driving can complement formal intervention efforts.

Preventive Approaches to Alcohol Abuse

Many researchers believe that a prudent approach to alcohol-related problems is prevention: inducing adolescents to avoid drinking altogether or to control their

drinking before the problems of alcohol abuse set in. Social influence programs in middle schools are typically designed to teach young adolescents drink-refusal techniques and coping methods for dealing with high-risk situations.

Research suggests some success with these programs. First, such programs enhance adolescents' self-efficacy, which, in turn, may enable them to resist the passive social pressure that comes from seeing peers drink (Donaldson, Graham, Piccinin, & Hansen, 1995). Second, these programs can change social norms that typically foster adolescents' motivation to begin using alcohol, replacing them with norms stressing abstinence or controlled alcohol consumption (Donaldson, Graham, & Hansen, 1994). Third, these programs can be low-cost options for low-income areas, which have traditionally been the most difficult to reach.

Drinking and Driving

Thousands of vehicular fatalities result from drunk driving each year. Programs such as MADD (Mothers Against Drunk Driving), founded and staffed by the families and friends of those killed by drunk drivers, put pressure on state and local governments for tougher alcohol control measures and stiffer penalties for convicted drunk driver. Moreover, hosts and hostesses are now pressured to assume responsibility for the alcohol consumption of their guests.

With increased media attention to the problem of drunk driving, drinkers seem to be developing self-regulatory techniques to avoid driving while drunk. These include limiting drinks to a prescribed number, arranging for a designated driver, getting a taxi, or delaying or avoiding driving after consuming alcohol. Although eliminating drinking altogether is unlikely to occur, the rising popularity of self-regulation to avoid drunk driving may help reduce this serious problem.

Is Modest Alcohol Consumption a Health Behavior?

Paradoxically, modest alcohol intake may contribute to a longer life. Approximately one to two drinks a day (less for women) reduces risk of a heart attack, lowers risk factors associated with coronary heart disease, and reduces risk of stroke (Britton & Marmot, 2004; Facts of Life, December 2003). These benefits may be especially true for older adults and senior citizens. Although many health care practitioners fall short of recommending that people have a drink or two each day, the evidence is mounting that modest drinking may actually reduce the risk for some major causes of death. Nonetheless, this remains an area of controversy.

SMOKING

Smoking is one of the greatest causes of preventable death. By itself and in interaction with other risk factors, it remains a chief cause of death in developed countries. In the United States, smoking accounts for at least 480,000 deaths each year—smoking is known to be the cause of 9 out of 10 lung cancer deaths in men and women (Centers for Disease Control and Prevention, February 2016) (Table 5.6). Nearly 17% of people in the United States still smoke (Tavernise, 2015), about 42 million people overall. Smoking is related to a fourfold increase in women's risk of developing breast cancer after menopause (Ambrosone et al., 1996). Smoking also increases the risk for chronic bronchitis, emphysema, respiratory disorders, damage and injuries due to fires and accidents, lower birth weight in offspring, and retarded fetal development (Center for the Advancement of Health, 2000h; Waller, McCaffery, Forrest, & Wardle, 2004). Smoking also increases risk of erectile dysfunction by 50 percent (Bacon et al., 2006).

The dangers of smoking are not confined to the smoker. Studies of secondhand smoke reveal that spouses, family members, and coworkers are at risk for a variety of health disorders (Marshall, 1986). Parental cigarette smoking can lower cognitive performance in adolescents by reducing blood oxygen capacity and increasing carbon monoxide levels (Bauman, Koch, & Fisher, 1989).

TABLE 5.6 | U.S. Cigarette Smoking-Related Mortality

Disease	Deaths
Lung cancer	127,700
Chronic obstructive pulmonary disease (COPD)	100,600
Heart disease	99,300
Other cancers	36,000
Other heart disease	25,500

Source: Centers for Disease Control and Prevention, February, 2016.

The risks of smoking are not confined to the smoker. Coworkers, spouses, and other family members of smokers are at risk for many smoking-related disorders.
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Synergistic Effects of Smoking

Smoking enhances the detrimental effects of other risk factors. For example, smoking and cholesterol interact to produce higher rates of heart disease than would be expected from simply adding together their individual risks (Perkins, 1985). Stress and smoking can also interact in dangerous ways. For men, nicotine can increase heart rate reactivity to stress. For women, smoking can reduce heart rate but increase blood pressure responses to stress (Girdler, Jamner, Jarvik, Soles, & Shapiro, 1997). Trauma exposure and posttraumatic stress disorder increase the health risks of smoking (Read et al., 2013). Smoking acts synergistically with low SES as well: Smoking inflicts greater harm among disadvantaged groups than among more advantaged groups (Pampel & Rogers, 2004).

Weight and smoking can interact to increase mortality. Cigarette smokers who are thin are at increased risk of mortality, compared with average-weight smokers (Sidney, Friedman, & Siegelaub, 1987). Thinness is not associated with increased mortality in people who have never smoked or among former smokers. Smokers engage in less physical activity than nonsmokers, which represents an indirect contribution of smoking to ill health.

Smoking is more likely among people who are depressed (Pratt & Brody, 2010; Prinstein & La Greca, 2009), and smoking interacts synergistically with depression to increase risk for cancer. Smoking may also be a cause of depression, especially in young people (Goodman & Capitman, 2000), which makes the concern about the synergistic effects of smoking and depression on health more alarming. Smoking is related to anxiety in adolescence; whether smoking and anxiety have a synergistic effect on health disorders is not yet known, but the chances of panic attacks and other anxiety disorders are increased (Johnson et al., 2000).

The synergistic health risks of smoking are very important and may be responsible for a substantial percentage of smoking-related deaths; however, research suggests that the public is largely unaware of the synergistic adverse effects of smoking (Hermand, Mullet, & Lavieville, 1997).

A Brief History of the Smoking Problem

For years, smoking was considered to be a sophisticated and manly habit. Characterizations of 19th- and 20th-century gentry, for example, often depicted men retiring to the drawing room after dinner for cigars and brandy. Cigarette advertisements of the early 20th century built on this image, and by 1955, 53 percent of the adult male population in the United States smoked. Women did not begin to smoke in large numbers until the 1940s, but once they did, advertisers began to tie cigarette smoking to feminine sophistication as well (Pampel, 2001).

In 1964, the first surgeon general's report on smoking came out (U.S. Department of Health, Education, and Welfare and U.S. Public Health Service, 1964), accompanied by an extensive publicity campaign to highlight the dangers of smoking. The good news is that, in the United States, the number of adults who smoke has fallen dramatically to 17 percent. In recent years, however, smoking has increased slightly, and it continues to be a major health problem.

Critics argue that the tobacco industry has disproportionately targeted minority group members and teens for smoking, and indeed, the rates among certain low-SES minority groups, such as Hispanic men, are especially high (Navarro, 1996). These differences may be due in part to differences in cultural attitudes regarding smoking (Johnsen, Spring, Pingitore, Sommerfeld, & MacKirnan, 2002). At present, 22 percent of high school students smoke (Centers for Disease Control and Prevention, 2008). Table 5.7 presents current figures on the prevalence of smoking, and Figure 5.3 shows the relation of smoking prevalence to smoking-related historical events.

As pressures to reduce smoking among children and adolescents have mounted, tobacco companies have turned their marketing efforts overseas. In developing countries, smoking represents a growing health problem. For example, smoking is reaching epidemic proportions in China. It is estimated that a third of all young Chinese men will die from the effects of tobacco, more than 3 million deaths each year by 2050 (Reaney, 1998).

Why Do People Smoke?

Nearly 3 decades of research on smoking have revealed how difficult smoking is to modify. There appear to be genetic influences on smoking (Piasecki, 2006). Genes that regulate dopamine functioning are likely candidates for these heritable influences (Timberlake et al., 2006).

Cigarette smokers are generally less health conscious (Castro, Newcomb, McCreary, & Baezconde-Garbanati, 1989), less educated, and less intelligent than nonsmokers (Hemmingsson, Kriebel, Melin, Allebeck, & Lundberg, 2008). Smoking and drinking often go together, and drinking seems to cue smoking, (Shiffman et al., 1994). Smokers are more impulsive, have more accidents and injuries at work, take off more sick time, and use more health benefits than nonsmokers, thereby representing substantial costs to the economy (Flory & Manuck, 2009; Ryan, Zwerling, & Orav, 1992). Smoking is an entry-level drug in childhood and adolescence for subsequent substance abuse: Trying cigarettes makes one significantly more likely to use other drugs in the future (Fleming, Leventhal, Glynn, & Ershler, 1989).

TABLE 5.7 | Smoking Prevalence by Age and Sex

	Percentage of Population	
Age	Males	Females
18–24	18.5%	14.8%
25–44	22.9	17.2
45–64	19.4	16.8
65+	9.8	7.5

Source: Centers for Disease Control and Prevention, November 2015.

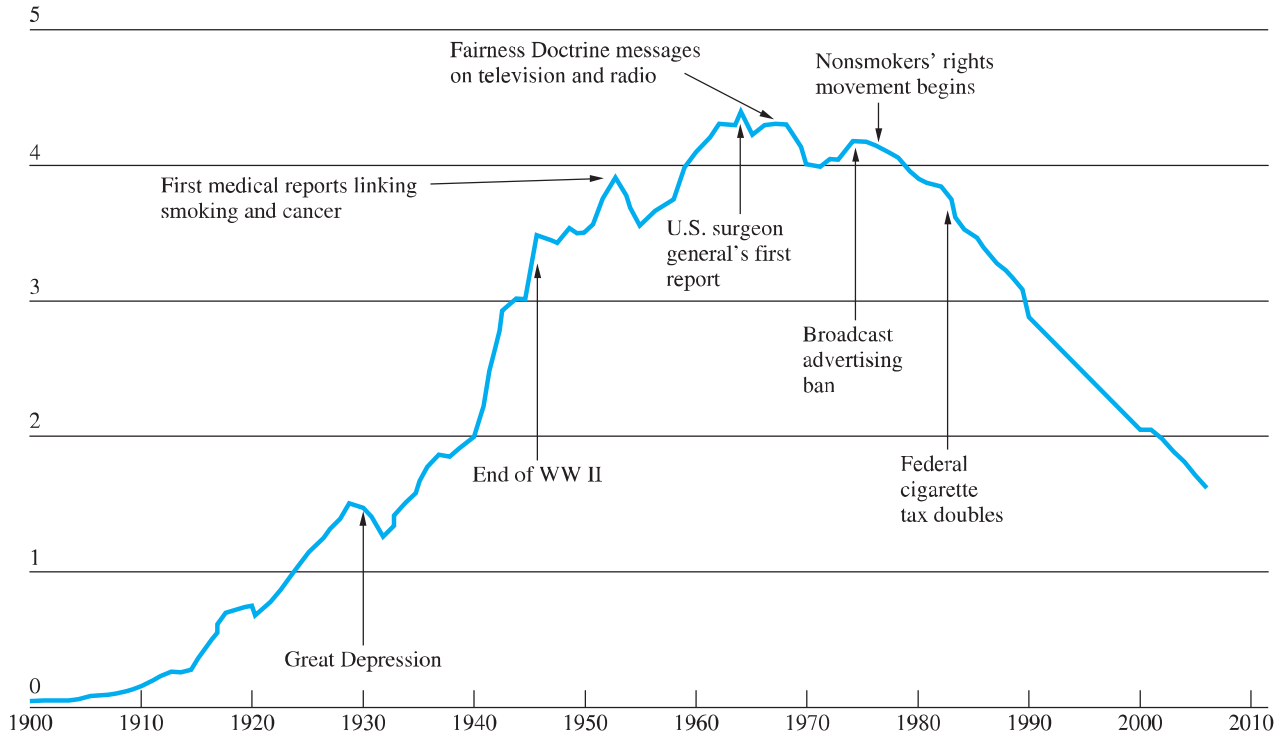
Factors Associated with Smoking in Adolescents

At least 46 percent of high school students have tried cigarette smoking. But smoking does not start all at once. There is a period of initial experimentation, during which the adolescent tries out cigarettes, experiences peer pressure to smoke, and develops attitudes about what a smoker is like. Following experimentation, only some adolescents go on to become heavy smokers (Maggi, Hertzman, & Vaillancourt, 2007).

Starting to smoke results from a social contagion process through contact with others who smoke (Presti, Ary, & Lichtenstein, 1992). More than 70 percent of all cigarettes smoked by adolescents are smoked in the presence of a peer (Biglan, McConnell, Severson, Bavry, & Ary, 1984). Once they begin smoking, adolescents are more likely to prefer the company of peers who smoke (Mercken, Steglich, Sinclair, Holliday, & Moore, 2012). Schools that look the other way or that have poor levels of discipline may inadvertently contribute to regular cigarette use (Novak & Clayton, 2001). As the prevalence of smoking goes up at a particular school, so does the likelihood that additional students will start smoking.

Smoking runs in families. Adolescents are more likely to start smoking if their parents smoke, and if their parents smoked early and often (Chassin et al., 2008). If their parents stopped smoking before the child turned approximately 8, smoking cessation

FIGURE 5.3 | Adult per Capita Cigarette Consumption (Thousands per Year) and Major Smoking and Health Events, United States (*Source:* U.S. Department of Agriculture, 2007)

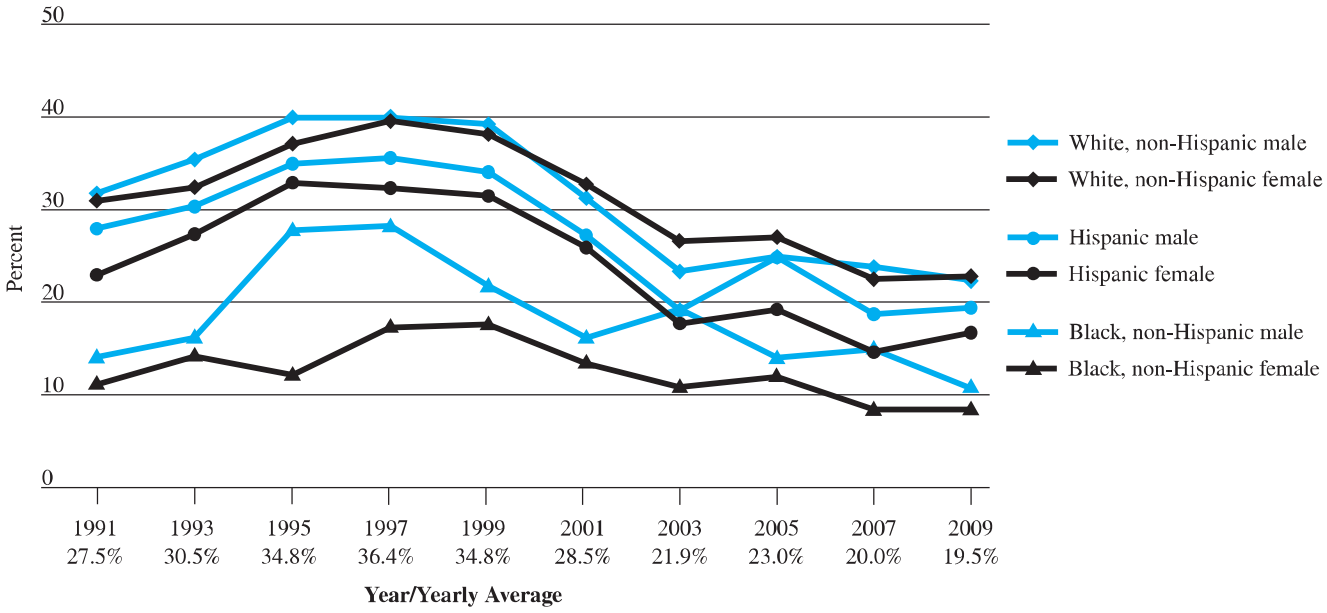


actually reduces the risk of smoking, presumably because of the family's anti-smoking attitudes (Wyszynski, Bricker, & Comstock, 2011). Adolescents are more likely to start smoking if they are from a lower social class, if they feel social pressure to smoke, and if there has been a major stressor in the family, such as parental separation or job loss (Swaim, Oetting, & Casas, 1996; Unger, Hamilton, & Sussman, 2004). These effects are partly due to the increase in stress and depression that may result (Kirby, 2002; Unger et al., 2004). Even watching people smoke in movies and on television contributes to high rates of adolescent smoking (Sargent & Heatherton, 2009) (Figure 5.4). Once adolescents begin to smoke, the risks they perceive from smoking decline, and so smoking itself reduces perceptions of risk (Morrell, Song, & Halpern-Felsher, 2010).

Smoking clusters in social networks, almost as an infectious disease might (Christakis & Fowler, 2008). Although smoking has declined overall, clusters of smokers who know each other increase the likelihood that a friend or relative will continue to smoke. The good news is that these geographic clusters also appear to spread quitting: The likelihood that someone will stop smoking increases by two-thirds if their spouse has stopped smoking, by 25 percent if a sibling has quit, and by 36 percent if a friend has quit. Even smoking cessation by a co-worker decreases the likelihood that one will continue to smoke by 34 percent. Smoking, like so many other risky behaviors, spreads through social ties (Christakis & Fowler, 2008).

Self-Identity and Smoking The image of one's self is a significant factor in beginning smoking (Tombor et al., 2015). Low self-esteem, dependency, feelings of powerlessness, and social isolation all increase the tendency to imitate others' behavior, and smoking is no exception (Ennett & Bauman, 1993). Feelings of being hassled, angry, or sad increase the likelihood of smoking (Whalen, Jamner, Henker, &

FIGURE 5.4 | Percentage of High School Students Who Smoke (*Source:* Centers for Disease Control and Prevention, 2010)



Delfino, 2001; Wills, Sandy, & Yaeger, 2002). Feelings of self-efficacy and good self-control skills help adolescents resist temptations to smoke (Wills et al., 2010). Self-identity is also important for stopping smoking. Identifying oneself as a smoker impedes the ability to quit smoking, whereas identifying oneself as a quitter can promote it (Van den Putte, Yzer, Willemson, & de Bruijn, 2009).

Nicotine Addiction and Smoking

Smoking is an addiction, reported to be harder to stop than heroin addiction or alcoholism (see Table 5.8). Only so-called chippers are able to smoke casually without showing signs of addiction. However, the exact mechanisms underlying nicotine addiction are unknown (Grunberg & Acri, 1991).

People smoke to maintain blood levels of nicotine and to prevent withdrawal symptoms. In essence, smoking regulates the level of nicotine in the body, and when plasma levels of nicotine depart from the ideal levels, smoking occurs. Nicotine alters levels of neuroregulators, including acetylcholine, norepinephrine, dopamine, endogenous opioids, and vasopressin. Nicotine may be used by smokers to engage these neuroregulators because they produce temporary improvements in performance or affect.

TABLE 5.8 | Why Is Smoking So Hard to Change?

Relapse rates among smoking quitters are very high. Why is smoking such a hard habit to change?

- Tobacco addiction typically begins in adolescence, when smoking is associated with pleasurable activities.
- Smoking patterns are highly individualized, and group interventions may not address all the motives underlying any particular smoker's smoking.
- Stopping smoking leads to short-term unpleasant withdrawal symptoms such as distractibility, nausea, headaches, constipation, drowsiness, fatigue, insomnia, anxiety, irritability, and hostility.
- Smoking is mood elevating and helps to keep anxiety, irritability, and hostility at bay.
- Smoking keeps weight down, a particularly significant factor for adolescent girls and adult women.
- Smokers are unaware of the benefits of remaining abstinent over the long term, such as improved psychological well-being, higher energy, better sleep, higher self-esteem, and a sense of mastery (Piper, Kenford, Fiore, & Baker, 2012).

Sources: Hertel et al., 2008; Stewart, King, Killen, & Ritter, 1995.

Acetylcholine, norepinephrine, and vasopressin appear to enhance memory, and acetylcholine and beta endorphins can reduce anxiety and tension. Alterations in dopamine, norepinephrine, and opioids

improve mood. Smoking among habitual smokers improves concentration, recall, alertness, arousal, psychomotor performance, and the ability to screen out irrelevant stimuli, and consequently smoking can improve performance. Habitual smokers who stop smoking report that their concentration is reduced; their attention becomes unfocused; their memory suffers; and they experience increases in anxiety, tension, irritability, craving, and moodiness.

However, this is not a complete picture. In studies that alter nicotine level in the bloodstream, smokers do not alter their smoking behavior enough to compensate for these manipulations. Moreover, smoking is responsive to rapidly changing forces in the environment long before such forces can affect blood plasma levels of nicotine. High rates of relapse are found among smokers long after plasma nicotine levels are at zero. Thus, the role of nicotine in addiction may be more complex.

Interventions to Reduce Smoking

Changing Attitudes Toward Smoking The mass media have been effective in providing the educational base for anti-smoking attitudes. Most people now view smoking as an addiction with negative social consequences. Antismoking media messages have also been effective in discouraging adults and adolescents from beginning to smoke (Hersey et al., 2005). However, education provides only a base and by itself may nudge people closer to the desire to quit but not to quitting itself.

Nicotine Replacement Therapy Many therapies begin with some form of nicotine replacement, such as nicotine patches, which release nicotine in steady doses into the bloodstream. Nicotine replacement therapy significantly increases initial smoking cessation (Cepeda-Benito, 1993; Hughes, 1993). E-cigarettes, which work by turning a nicotine-infused liquid into a vapor, are based on this principle. Whether e-cigarettes are safe, however, is unclear (*The Economist,* March 23, 2013). Finding the answer to this question is important, because more youngsters now smoke e-cigarettes than traditional ones (Esterl, 2015).

The Therapeutic Approach to the Smoking Problem Accordingly, health psychologists have moved to a therapeutic approach to the smoking problem.

Attentional retaining involves helping smokers reorient their attention away from smoking-related cues, both internal and in the environment. It can be a first step in a stopping smoking intervention to help reduce craving and orienting toward smoking-related cues (Kerst & Waters, 2014). Exercise is also a method of reducing attentional bias toward smoking-related cues (Oh & Taylor, 2014).

Many smoking intervention programs have used the stages of change model as a basis for intervening. Interventions to move people from the precontemplation to the contemplation stage center on changing attitudes, emphasizing the adverse health consequences of smoking and the negative social attitudes that most people hold about smoking. Motivating a readiness to quit may, in turn, increase a sense of self-efficacy that one will be able to do so, contributing further to readiness to quit (Baldwin et al., 2006).

Moving people from contemplation to action requires that the smoker develop implementation intentions to quit, including a timetable for quitting, a program for how to quit, and an awareness of the difficulties associated with quitting (Armitage, 2008). Moving people to the action phase employs many of the cognitive-behavioral techniques that have been used to modify other health habits.

As this account suggests, smoking would seem to be a good example of how the stage model might be applied. However, interventions matched to the stage of smoking are inconsistent in their effects (Quinlan & McCaul, 2000; Segan, Borland, & Greenwood, 2004; Stotts, DiClemente, Carbonari, & Mullen, 2000).

Social Support and Stress Management As is true for other health habit interventions, would-be ex-smokers are more likely to be successful over the short term if they have a supportive partner and nonsmoking supportive friends. The presence of smokers in one's social network is a hindrance to maintenance and predicts relapse (Mermelstein, Cohen, Lichtenstein, Baer, & Kamarck, 1986). Consequently, couple-based interventions have been developed that seem to be especially effective (Khaddouma et al., 2015).

Stress management training is helpful for successful quitting (Yong & Borland, 2008). Because smoking is relaxing for so many people, teaching smokers how to relax in situations in which they might be tempted to smoke provides an alternative method

Smoking has been represented by the tobacco industry as a glamorous habit, and one task of interventions has been to change attitudes about smoking.
Courtesy State of Health Products, www.buttout.com 888-428-8868

for coping with stress or anxiety (Manning, Catley, Harris, Mayo, & Ahluwalia, 2005). Lifestyle rebalancing through changes in diet and exercise also helps people cut down on smoking or maintain abstinence after quitting.

Image is also important in helping people stop. Specifically, people who have a strong sense of themselves as nonsmokers do better in treatment than those who have a strong sense of themselves as smokers (Gibbons & Eggleston, 1996; Shadel & Mermelstein, 1996). Interventions with young women who smoke must take into account appearance-related issues, as young women often fear that if they stop smoking, they will put on weight (Grogan et al., 2011).

Interventions with Adolescents Earlier, we noted how important the image of the cool, sophisticated smoker is in getting teenagers to start smoking. Several interventions to induce adolescents to stop smoking have made use of self-determination theory. Because adolescents often begin smoking to shore up their self-image with a sense of autonomy and control, self-determination theory targets those same cognitions—namely, autonomy and self-control—but from the opposite vantage point; that is, they target the behavior of stopping smoking instead (Williams, McGregor, Sharp, Kouides, et al., 2006).

Relapse Prevention Relapse prevention techniques are typically incorporated into smoking cessation programs (Piasecki, 2006). Relapse prevention is important because the ability to remain abstinent shows a steady month-by-month decline, such that, within 2 years after smoking cessation, even the best programs do not exceed a 50 percent abstinence rate (Piasecki, 2006).

Relapse prevention techniques begin by preparing people for withdrawal, including cardiovascular changes, increases in appetite, variations in the urge to smoke, increases in coughing and discharge of phlegm, and increases in irritability. These problems occur intermittently during the first 7–11 days. Relapse prevention also focuses on the ability to manage high-risk situations that lead to a craving for cigarettes, such as drinking coffee or alcohol (Piasecki, 2006) and on coping techniques for dealing with stressful interpersonal situations. Some relapse prevention approaches include contingency contracting, in which the smoker pays a sum of money that is returned only on the condition of cutting down or abstaining.

Like most addictive health habits, smoking shows an abstinence violation effect, whereby a single lapse reduces perceptions of self-efficacy, increases negative mood, and reduces beliefs that one will be successful in stopping smoking (Shadel et al., 2011). Stress-triggered lapses lead to relapse more quickly than do other kinds (Shiffman et al., 1996). Consequently, smokers need to remind themselves that a single lapse is not necessarily worrisome, because many people lapse on the road to quitting. Sometimes, buddy systems or telephone counseling procedures can help quitters avoid turning a single lapse or

temptation into a full-blown relapse (Lichtenstein, Glasgow, Lando, Ossip-Klein, & Boles, 1996).

Evaluation of Interventions How successful have smoking interventions been? Adult smokers are well served by cognitive behavioral interventions that include self-monitoring, modification of the stimuli that elicit and maintain smoking, reinforcing successful smoking cessation, and relapse prevention techniques such as rehearsing alternative coping techniques in high-risk situations. However, these approaches may be less successful with adolescents. What may be needed instead are inexpensive, efficient, short-term interventions (McVea, 2006). Programs that include a motivation enhancement component, a focus on self-efficacy, stress management, and social skills training can be successful and can be delivered in school clinics and classrooms (Sussman, Sun, & Dent, 2006; Van Zundert, Ferguson, Shiffman, & Engels, 2010).

Virtually every imaginable combination of therapies for getting people to stop has been tested. Typically, these programs show high initial success rates for quitting, followed by high rates of return to smoking, sometimes as high as 90 percent. Those who relapse are more likely to be young and dependent on nicotine. Those who relapse often have a low sense of self-efficacy, concerns about gaining weight after stopping smoking, more previous quit attempts, and more slips (occasions when they used one or more cigarettes) (Lopez, Drobes, Thompson, & Brandon, 2008; Ockene et al., 2000).

Although the rates of relapse suggest some pessimism, it is important to consider the cumulative effects of smoking cessation programs. Any single effort to stop smoking yields only a 20 percent success rate, but with multiple efforts to quit, eventually the smoker may become an ex-smoker (Lichtenstein & Cohen, 1990). In fact, hundreds of thousands of smokers have quit, albeit not necessarily the first time they tried. Over time, people may amass enough techniques and the motivation to persist.

People who quit on their own are typically well-educated and have good self-control skills, self-confidence in their ability to stop, and a perception that the health benefits of stopping are substantial (McBride et al., 2001). Stopping on one's own is easier if one has a supportive social network that does not smoke and if one is able to distance oneself from the typical smoker and identify with nonsmokers instead (Gerrard, Gibbons, Lane, & Stock, 2005). Stopping is also more successful following an acute or chronic health threat, such as a diagnosis of heart disease, especially among middle-aged smokers (Falba, 2005). A list of guidelines for people who wish to stop on their own appears in Table 5.9.

TABLE 5.9 | Quitting Smoking

Here are some steps to help you prepare for your Quit Day:
• Pick the date and mark it on your calendar. • Tell friends and family about your Quit Day. • Stock up on oral substitutes—sugarless gum, carrot sticks, and/or hard candy. • Decide on a plan. Will you use nicotine replacement therapy? Will you attend a class? If so, sign up now. • Set up a support system. This could be a group class, Nicotine Anonymous, or a friend who has successfully quit and is willing to help you.
On your Quit Day, follow these suggestions:
• Do not smoke. • Get rid of all cigarettes, lighters, ashtrays, and any other items related to smoking. • Keep active—try walking, exercising, or doing other activities or hobbies. • Drink lots of water and juice. • Begin using nicotine replacement if that is your choice. • Attend a stop-smoking class or follow a self-help plan. • Avoid situations where the urge to smoke is strong. • Reduce or avoid alcohol. • Use the four "A's" (avoid, alter, alternatives, activities) to deal with tough situations.

Source: American Cancer Society, 2014.

Brief Interventions Brief interventions by physicians and other health care practitioners can bring about smoking cessation and control relapse (Vogt, Hall, Hankins, & Marteau, 2009). Providing smoking cessation guidelines during medical visits may improve the quit rate (Williams, Gagne, Ryan, & Deci, 2002). One health maintenance organization targeted the adult smokers in their program with telephone counseling and newsletters that offered quitting guidelines; the program achieved its goal of reducing the smoking, and, most notably, it reached smokers who otherwise would not have participated in cessation programs (Glasgow et al., 2008). The state of Massachusetts

began offering free stop smoking treatment to poor residents in 2006 and achieved a remarkable decline in smoking from 38 to 28 percent, suggesting that incorporating brief interventions into Medicaid programs can be successful (Goodnough, 2009, December 17).

Workplace Initially, workplace interventions were thought to hold promise in smoking cessation efforts. To date, however, workplace interventions are not more effective than other intervention programs (Facts of Life, July 2005). However, when workplace environments are entirely smoke free, employees smoke much less (Facts of Life, July 2005).

Commercial Programs and Self-Help A variety of **self-help aids** and programs have been developed for smokers to quit on their own. These include nicotine patches, as well as more intensive self-help programs. Cable television programs designed to help people stop initially and to maintain their resolution have been broadcast in some cities. Although it is difficult to evaluate self-help programs formally, studies suggest that initial quit rates are lower but that long-term maintenance rates are just as high as with more intensive behavioral interventions. Because self-help programs are inexpensive, they represent an important attack on the smoking problem for both adults and adolescents (Lipkus et al., 2004).

Quitlines provide telephone counseling to help people stop smoking and are quite successful (Lichtenstein, Zhu, & Tedeschi, 2010). People can call in when they want to get help for quitting or if they are worried about relapse. Most such programs are based on principles derived from CBT. Both adults and younger smokers can benefit from this kind of telephone counseling (Rabius, McAlister, Geiger, Huang, & Todd, 2004).

Internet interventions are a recent approach to the smoking problem that has several advantages: People can seek them out when they are ready to and without regard to location. They can deal with urges to smoke by getting instant feedback from an Internet service. In a randomized control trial sponsored by the American Cancer Society, an Internet program for smoking cessation was significantly more helpful to smokers trying to quit than a control condition. Moreover, the effects lasted longer than a year, suggesting the long-term efficacy of Internet interventions for smoking cessation (Seidman et al., 2010).

Public health approaches to reducing smoking begin with warning labels on cigarette packs, billboards, and other places where they are likely to be noticed. These warnings help raise concerns, which can lead to quit attempts (Yong et al., 2014). More broad-based approaches initially focused on community interventions combining media blitzes with behavioral interventions directed especially at high-risk people, such as people with other risk factors for CHD. However, such interventions are often expensive, and long-term follow-ups suggest limited long-term effects (Facts of Life, July 2005). Ultimately, banning cigarette smoking from workplaces and public settings and raising cigarette taxes have been most successful in reducing smoking (Orbell et al., 2009; *The Economist,* July 11, 2015).

Smoking Prevention Programs

The war on smoking also focuses on keeping potential smokers from starting. These **smoking prevention programs** aim to catch potential smokers early and attack the underlying motivations that lead people to smoke (Ary et al., 1990). Typically, these programs are implemented through the school system. They are inexpensive and efficient because little class time is needed and no training of school personnel is required.

The central components of social influence interventions are:

- Information about the negative effects of smoking is carefully constructed to appeal to adolescents.
- Materials are developed to convey a positive image of the nonsmoker (rather than the smoker) as an independent, self-reliant individual.
- The peer group is used to foster not smoking rather than smoking.

Evaluation of Social Influence Programs Do these programs work? Overall, social influence programs can reduce smoking rates (Resnicow, Reddy, et al., 2008) for as long as 4 years (Murray, Davis-Hearn, Goldman, Pirie, & Luepker, 1988). However, experimental smoking may be affected more than regular smoking, and experimental smokers may stop on their own anyway (Flay et al., 1992). What is needed are programs that will reach the child destined to become a regular smoker, and as yet, we know less about what helps to keep these youngsters from starting to smoke.

The Perils of Secondhand Smoke BOX 5.7

Norma Broyne was a flight attendant with American Airlines for 21 years. She had never smoked a cigarette, and yet, in 1989, she was diagnosed with lung cancer, and part of a lung had to be removed. Broyne became the center of a class-action suit brought against the tobacco industry, seeking $5 billion on behalf of 60,000 current and former nonsmoking flight attendants for the adverse health effects of the smoke they inhaled while performing their job responsibilities prior to 1990, when smoking was legal on most flights (Collins, 1997, May 30). Norma Broyne finally saw her day in court. The tobacco companies that she and other flight attendants sued agreed to pay $300 million to set up a research foundation on cancer.

Passive smoking, or **secondhand smoke,** is the third-leading cause of preventable death in the United States, killing more than 41,000 nonsmokers every year (Table 5.10). It causes about 3,000 cases of lung cancer annually, as many as 62,000 heart disease deaths, and exacerbation of asthma in 1 million children (California Environmental Protection Agency, 2005). Babies with prenatal exposure to secondhand smoke have a 7 percent lower birth weight (Environmental Health Perspectives, 2004). Exposure to secondhand smoke also increases the risk of depression (Bandiera et al., 2010).

TABLE 5.10 | The Toll of Secondhand Smoke

Disease	Annual Consequences
Lung cancer	7,330 deaths
Heart disease	33,950 deaths
Sudden infant death syndrome	430 deaths
Buildup of fluid in the middle ear	790,000 doctor's office visits
Asthma in children	202,000 asthma flare-ups
Lower respiratory infection	150,000–300,000

Source: American Lung Association, 2016.

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In a dramatic confirmation of the problems associated with workplace smoking, the state of Montana imposed a ban on public and workplace smoking in June 2002 and then overturned it 6 months later. Two physicians charted the number of heart attacks that occurred before the ban, during it, and afterward. Heart attack admissions dropped 40 percent when the workplace ban on smoking was in place but immediately bounced back when smoking resumed. What is remarkable about the Montana study is its demonstration of its immediate impact on a major health outcome—heart attacks—in such a short time (Glantz, 2004).

Overall, the best way to reduce smoking is to tax tobacco products, restrict where people can smoke, and deliver cost effective cognitive behavioral interventions with relapse prevention techniques to people who are already smokers (Federal Tax Increase, 2009). •

SUMMARY

1. Health-compromising behaviors are those that threaten or undermine good health. Many of these behaviors cluster and first emerge in adolescence.
2. Obesity has been linked to cardiovascular disease, kidney disease, diabetes, some cancers, and other chronic conditions.
3. Causes of obesity include genetic predisposition, early diet, a family history of obesity, low SES, little exercise, and consumption of large portions of high calorie food and drinks. Ironically, dieting may contribute to the propensity for obesity.
4. Obesity has been treated through diets, surgical procedures, drugs, and cognitive-behavioral (CBT) approaches. CBT includes monitoring eating behavior, modifying the environmental stimuli that control eating, gaining control over the eating process, and reinforcing new eating habits. Relapse prevention skills help in long-term maintenance.
5. Cognitive-behavioral techniques can produce weight losses of 2 pounds a week for up to 20 weeks, maintained over a 2-year period.
6. Increasingly, interventions are focusing on weight-gain prevention with children in obese families and with high-risk adults.
7. Eating disorders, especially anorexia nervosa, bulimia, and bingeing are major health problems, especially among adolescents and young adults, and health problems, including death, commonly result.
8. Alcoholism accounts for thousands of deaths each year through cirrhosis, cancer, fetal alcohol syndrome, and accidents connected with drunk driving.
9. Alcoholism has a genetic component and is tied to sociodemographic factors such as low SES. Drinking also arises in an effort to buffer the impact of stress and appears to peak between ages 18 and 25.
10. Residential treatment programs for alcoholism begin with an inpatient "drying out" period, followed by the use of cognitive-behavioral change methods including relapse prevention. However, most programs are outpatient and use principles of CBT.
11. The best predictor of success is the patient. Alcoholics with mild drinking problems, little abuse of other drugs, and a supportive, financially secure environment do better than those without such supports.
12. Smoking accounts for more than 480,000 deaths annually in the United States due to heart disease, cancer, and lung disorders.
13. Theories of the addictive nature of smoking focus on nicotine and nicotine's role as a neuroregulator.
14. Attitudes toward smoking have changed dramatically for the negative, largely due to the mass media. Attitude change has kept some people from beginning smoking, motivated many to try to stop, and kept some former smokers from relapsing.
15. Many programs for stopping smoking begin with some form of nicotine replacement, and use CBT to help people stop smoking. Interventions also include social skills training programs and relaxation therapies. Relapse prevention is an important component of these programs.
16. Smoking is highly resistant to change. Even after successfully stopping for a short time, most people relapse. Factors that contribute to relapse include addiction, lack of effective coping techniques for dealing with social situations, and weight gain.
17. Smoking prevention programs are designed to keep youngsters from beginning to smoke. Many of these programs use a social influence approach and teach youngsters how to resist peer pressure to smoke and help adolescents improve their coping skills and self-image.
18. Social engineering approaches to control smoking have also been used, in part, because secondhand smoke harms others in the smoker's environment.

KEY TERMS

addiction
alcoholism
anorexia nervosa
binge eating disorder
bingeing
bulimia
controlled drinking
craving
detoxification
obesity
passive smoking
physical dependence
placebo drinking
problem drinking
secondhand smoke
self-help aids
set point theory of weight
smoking prevention programs
stress eating
tolerance
withdrawal
yo-yo dieting