


# Self-guided Change: The most common form of long-term, maintained health behavior change

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## Abstract

Millions of people change risky, health-related behaviors and maintain those changes. However, they often take years to change, and their unhealthy behaviors may harm themselves and others and constitute a significant cost to society. A review—similar in nature to a scoping review—was done of the literature related to long-term health behavior change in six areas: alcohol, cocaine and heroin misuse, gambling, smoking, and overeating. Based on the limited research available, reasons for change and strategies for changing and for maintaining change were also reviewed. Fifty years of research clearly indicate that as people age, in the case of alcohol, heroin and cocaine misuse, smoking, and gambling, 80–90 percent moderate or stop their unhealthy behaviors. The one exception is overeating; only 20 percent maintain their weight loss. Most of these changes, when they occur, appear to be the result of self-guided change. More ways to accelerate self-guided, health-related behavior change need to be developed and disseminated.

## Keywords

alcohol, binge drinking, gambling, health behavior change, health behavior change maintenance, natural recovery, self-guided change, smoking cessation, substance abuse, weight loss

Millions of people change risky, health-related behaviors gradually over time and maintain those changes. Most recently, a Federal study of 138,000 people indicate that the majority of binge and excessive drinkers moderate or stop their drinking behavior (Esser et al., 2014). People may relapse while trying to change many behaviors, for example, dieting and typical New Year's resolutions, but this is not the case for literally millions of people who change their alcohol, cocaine and heroin use, overeating, pathological gambling, and smoking (Calabria et al., 2010; Esser et al., 2014; Lopez-Quintero et al., 2011; Slutske et al., 2009).

There are few resources available for the millions of people who gradually moderate or stop such behaviors, and they may take many years to change. During that time, they may do harm to themselves and others, resulting in a significant cost to society (Bouchery et al., 2011; Woerle et al., 2007). Specifically, overeating gradually leads to obesity and all the attendant ill health. If we understood better how the millions of people who do lose weight and keep it off manage to make such a difficult behavioral lifestyle change, we might be able to decrease the number of people who find it almost impossible to lose weight and maintain the loss. Binge drinking may lead to what the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev.;

DSM-IV-TR) called “dependence” and the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; DSM-5) calls a “severe alcohol use disorder” (AUD; Muraven et al., 2005a, 2005b). If that is the case, helping more people stop binge drinking sooner would decrease the probability of that occurring. If we understood better how thousands of people manage to quit heroin and stay quit, perhaps we could develop and disseminate ways to help others make that change, lessening the current opioid epidemic.

The research indicates that most of these people do not seek or want treatment (Chapman and Wakefield, 2013; Dąbrowska et al., 2017; Edlund et al., 2009; Grant, 1997; Lipari et al., 2016; Slutske et al., 2009; Verissimo and Grella, 2017). That is probably partly because the treatment that is available is designed primarily for those who have serious problems. Consequently, that kind of help is not seen as useful. In contrast, smartphones with just-in-time interventions combined with predictive

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analytics and machine learning may provide more help. But, first, more research must be focused on better understanding the processes and strategies involved when people change and maintain change in risky health behaviors. Naslund et al. (2017) argue that all interventions should be theory-based, but, to date, basing interventions on theories has not improved their effectiveness (Prestwich et al., 2014).

This article focuses on six risky, health behaviors. Based on the limited research available, it reviews the reasons people give for changing and the strategies they use to change and to maintain that change. The focus is not on those who may be “addicted.” Although changers may have met the DSM-5 criteria for severe alcohol or drug misuse, pathological gambling, and/or nicotine dependence at some point in their lives, the focus of the article is not on those who have severe misuse issues or are “addicted.” Rather, the focus is on those who manage to moderate or stop risky health behaviors and on how they manage to do it. The review also highlights the fact that millions of people change without treatment and that “self-guided change” is a more accurate term for what occurs, in contrast to “natural recovery,” “spontaneous remission,” or “maturing out.”

## Method

Arksey and O’Malley’s (2005) framework for a scoping review was used as a guideline for this study. The research questions of interest included the following: (1) How prevalent is change in risky health behaviors? (2) To what extent does this change occur without formal treatment? (3) What does the research suggest are common reasons given for making such changes? (4) What does the research suggest are the strategies used most frequently for making and maintaining such changes?

The relevant studies were found by entering a variety of terms into Google, Google Scholar, PsycINFO, and the university library’s search engine. Keywords and questions were entered into the search engines, for example, health behavior change, health behavior change maintenance, natural recovery, moderate drinking, alcoholism, heroin, maturing out; How do people quit ...? How do people cut down on ...? What are the reasons people give for quitting ...? Do people stop using heroin on their own? How do people lose weight and keep it off? In four of the six areas (alcohol, heroin, cocaine, and gambling), decreases in risky or unhealthy behavior have been referred to as “natural recovery.” Although that term is problematic for a number of reasons, it generated the majority of studies in those four areas.

Popular, non-research articles were excluded. Case studies and qualitative studies were also excluded. Research articles that had not appeared as a result of the search engine searches but were referenced in other studies were found and included. Consistent with a scoping review as opposed

to a systematic review, the quality of the studies was not assessed.

The findings were then summarized and are presented in boxes for each of the six behaviors. The results are then discussed in terms of possible future research and the development and dissemination of new approaches to help individuals make health behavior changes more rapidly and sooner in life.

## Results

Outlined below is the evidence for maintained change for six risky health behaviors. Reasons given for initiating change and strategies used for changing and maintenance are included for each based on the research, although the number of studies is quite limited.

### Alcohol

A Federal study (Esser et al., 2014) of more than 138,000 people in the United States indicates that an enormous number of people engage in potentially risky, unhealthy behavior. Specifically, based on the US Census Bureau’s (2011) data, approximately 64,000,000 people in the United States report binge drinking at least once per month. Binge drinking is defined by the Substance Abuse and Mental Health Services Administration (SAMHSA, 2016) as five or more alcoholic drinks for a man or four or more drinks for a woman during the same drinking episode or within a couple of hours (Table 1).

However, at the same time, the evidence is also clear that millions of people gradually change unhealthy drinking behavior to safer, more healthy drinking behavior as they age (see Figure 1).

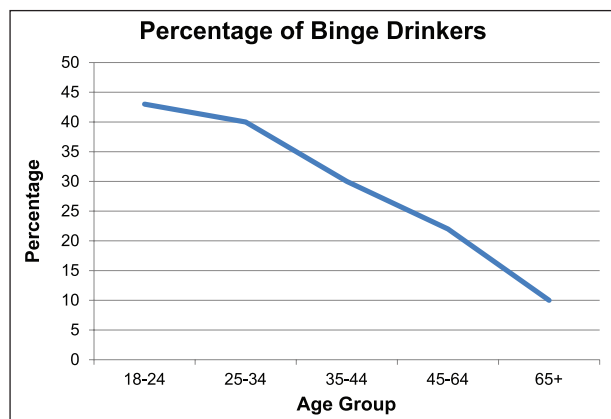
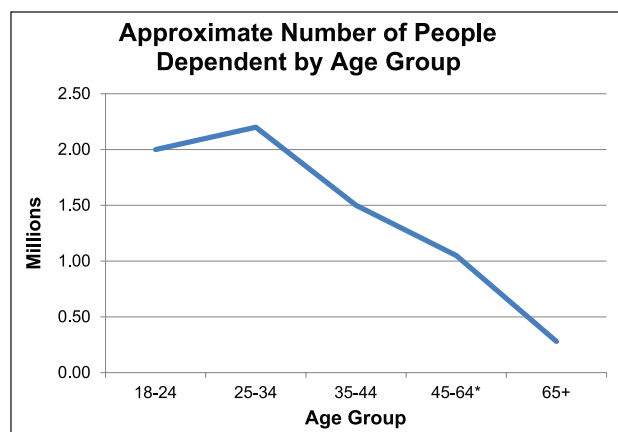
Looked at in terms of millions of people, approximately 4 million fewer people reported binge drinking in the 35-44 age group than did in the 25-34 age group, and approximately 12 million fewer people reported binge drinking in the 65+ age group compared to the 25-34 age group. No doubt, some of the decrease is due to mortality. The Esser et al. (2014) data also indicate that even many people who meet the DSM-IV criteria for alcohol dependence change their behavior (see Figure 2).

Approximately 5.4 percent of the 25–34 years age group in the United States as of 2010 met the DSM-IV criteria for dependency, that is, approximately 2.2 million people (Esser et al., 2014). This number fell to 1.5 million in the 35–44 years age group, a decrease of about 700,000 people. Only 0.7 percent or 280,000 people in the more than 65+ years age group were dependent. No doubt, some of the decrease is also due to mortality.

Many people may eventually abstain completely, but 50 years of research evidence clearly indicates that most drinkers moderate their drinking behavior (Davies, 1962; Esser et al., 2014; Lopez-Quintero et al., 2011; Sobell et al., 1996). They do not abstain entirely when they change their

**Table 1.** Binge drinking by age group.

Age group (years)	Millions (based on US Census, 2010)	Percent reporting at least one binge drinking episode per month	
18–24	31	43	Approx. 13.3 million people
25–34	41	40	Approx. 16.4 million people
35–44	41	30	Approx. 12.3 million people
45–64	81	22	Approx. 17.8 million people
65+	40	10	Approx. 4.0 million people
		Total	63.8 million people

**Figure 1.** Percentage of binge drinkers by age group in the United States as of 2010.**Figure 2.** Approximate number of dependent (based on DSM-IVR criteria) drinkers by age group in the United States as of 2010.

drinking behavior. They do not usually see themselves as “alcoholics,” and as noted in the Esser et al. (2014) study, they are not dependent on alcohol. Young people, in particular, often change their behavior and maintain that change (Jackson et al., 2001; Reich et al., 2015).

Vaillant (1996, 2003) has some of the best, long-term data regarding alcohol abuse. In the case of the alcohol

abusing men in the two samples that Vaillant studied for 60 years, many of those who were still alive had changed their behavior: in the two samples, 32 and 21 percent were abstinent and 1 and 11 percent were controlled drinkers. However, 11 and 12 percent were still abusing alcohol; their behavior may contribute to the idea that most people do not change this significant and common unhealthy behavior.

Currently, most research is focused on the factors that contribute to binge and excessive drinking. With a few exceptions (Matzger et al., 2005; Sobell et al., 1995, 2000), research has not focused on how people change their drinking behavior and how they maintain that change, but the available data suggest the following (Table 2).

**Noteworthy for clinicians.** As noted earlier, most people who drink heavily or binge drink are not “alcoholics” (Esser et al., 2014). They do not see the need for and/or value current forms of treatment (Edlund et al., 2009; Grant, 1997). They may benefit from short consultations versus traditional therapy, for example, motivational interviewing (Bishop, 2002; Miller and Rollnick, 2012). Checkup and Choices® (Campbell et al., 2016; Hester et al., 2005, 2009, 2011, 2013) is available online for those who want to moderate, and Moderation Management (n.d.) is also available in some cities ([www.moderation.org](http://www.moderation.org)). Mobile technologies may help (Muench et al., 2017; Suffoletto and Chung, 2016). Comorbidity, for example, depression and anxiety disorders, increases the likelihood of alcohol dependence and relapse (Boschloo et al., 2012).

In the past 10 years, the use of protective behavior strategies has received some attention, but few universities disseminate such ideas publicly, partly because alcohol is banned on most campuses, leading to rampant pre-gaming (Martens et al., 2007; Pearson, 2013).

### Cocaine

The data from the study by Lopez-Quintero et al. (2011) indicate that 5 years after becoming dependent on cocaine, 50 percent of cocaine users have quit. More than two-thirds of the total remissions occur within 10 years after dependence. The time to remission varies according to ethnic group: 50 percent of Whites had remitted within 4 years,

**Table 2.** Summary of reasons and strategies for change and maintenance of change for alcohol consumption.

Alcohol consumption		Reported % of participants
Primary reasons to moderate or abstain	Health problems/concerns (Sobell et al., 2000)	63
	Weighing pros and cons (Matzger et al., 2005)	53
	Major change in life (Matzger et al., 2005)	65
	Financial costs (Sobell et al., 2000)	30
Primary strategies used to moderate or abstain	Use of PBSs (Martens et al., 2007; Pearson, 2013)	n.a.
	Alternating drinking alcoholic and non-alcoholic beverages	n.a.
	Learning to refuse when offered a drink	n.a.
	Reduce drinks per day and drinking days per week (Witkiewitz et al., 2014)	n.a.
Primary maintenance strategies	Mobile apps (e.g. Muench et al., 2017; Suffoletto and Chung, 2016)	n.a.
	Thought about negative consequences (Sobell et al., 1995)	72
	Willpower (Sobell et al., 1995)	60
	Thought about positive consequences of not drinking (Sobell et al., 1995)	53
	Drank non-alcoholic beverages (Sobell et al., 1995)	45

PBSs: protective behavioral strategies; n.a: not available.

Blacks averaged 9 years, and Hispanics, 8 years. Of greater significance, more than 99, 98, and 94 percent of Whites, Blacks, and Hispanics eventually stopped. It is unclear how many received treatment, but one study found that only 11 percent of the people who needed substance abuse treatment received it; however, 95.4 percent of the people who did not receive treatment did not think they needed it (Lipari et al., 2016).

As noted regarding alcohol misuse, most research has been focused on what contributes to cocaine misuse. Very few studies have looked into why cocaine users quit and how they quit. One exception is a study by Toneatto et al. (1999). They interviewed 50 untreated cocaine users who had quit cocaine and had been abstinent at least a year; the mean time abstinent was 3.7 years; the mean age was 29 years; the mean duration of use was 10.3 years. Another study (Flynn et al., 2003a) looked at the reasons for recovery in 708 patients, that is, people who had sought treatment to change (Table 3).

*Noteworthy for clinicians.* “Hitting bottom” (a life-crisis event) was not frequently reported as the reason for quitting. Many participants (50%) said it was somewhat or extremely difficult to quit, but 38 percent said it was somewhat or extremely easy. The mean drinking per day reported was 8.5 drinks, so many people may quit by switching to alcohol, even though 35% reported that alcohol was a trigger (Toneatto et al., 1999). One study suggests that many older, dually diagnosed adults do not recover without treatment (Searby et al., 2015).

### Gambling

As is true with many other problematic behaviors, a large number of people resolve their difficulties with gambling on their own (Dabrowski et al., 2017; Hodgins et al., 1999).

Slutske (2006) found that to be true for about one-third of her sample. She also reported that of those who had a history of gambling, 36–39 percent had not experienced any pathological gambling problems in the past year. However, a subsequent study found that 82 percent had done so (Slutske et al., 2009); this was more true of men (92%) than women (57%). Those with more severe pathological gambling problems tended to seek treatment more than those who had less severe problems. Overall, however, only 7–12 percent had ever sought treatment or attended self-help meetings regularly. More recently, Dabrowska et al. (2017) found that 75 percent had not sought treatment or participated in self-help meetings.

Hodgins and El-Guebaly (2000) interviewed 43 resolved and 63 active pathological gamblers (Table 4). Resolved participants had been “recovered” for a mean of 3.5 years. However, Slutske et al. (2010) found that 90 percent of an Australian sample of recovered pathological gamblers, that is, they “had no symptoms of pathological gambling in the past year” (p. 2169), had gambled in some fashion during that year, suggesting that many if not most gamblers cut down rather than abstain entirely.

*Noteworthy for clinicians.* Comorbidity, for example, mood disorders and alcohol and other drug misuse, is often very high, yet most (82%) participants in one study (Hodgins and El-Guebaly, 2000) preferred to “do it [quit or moderate] on their own” (p. 784).

### Heroin/opioids

Despite what many people may believe, the majority of people dependent on heroin eventually quit, many on their own. According to Blanco et al. (2013), 96 percent of people with a history of abusing prescription medications, including opioids, eventually stopped; 50 percent had

**Table 3.** Summary of reasons and strategies for change and maintenance of change for cocaine misuse, based on Toneatto et al. (1999) and Flynn et al. (2003a).

Cocaine		Reported % of participants
Primary reasons to abstain	Cognitive evaluation of the pros and cons of continuing to use <sup>a</sup>	78
	External pressure from family and friends <sup>a</sup>	46
	Financial problems <sup>a</sup>	38
Primary strategies used to moderate or abstain		n.a.
Primary maintenance strategies	Improvement of self-concept; improved self-esteem and confidence <sup>a</sup>	92
	Coping strategies, e.g., “deliberate recall of the negative consequences of cocaine” (p. 265) <sup>a</sup>	78
	Treatment <sup>b</sup>	78
	Change of friends <sup>a</sup>	76
	“Mature actions” <sup>b</sup>	76
	Constructive, fulfilling lifestyle <sup>b</sup>	80
	Overall personal growth <sup>b</sup>	83
	Learning to “tough out” (p. 265) and accept urges <sup>a</sup>	65
	Support from spouse <sup>a</sup>	65
	Support from friends <sup>a</sup>	58
	Change in drug use (to alcohol and/or cannabis) <sup>a</sup>	56
	Change of address <sup>a</sup>	54
	Religion and spirituality <sup>b</sup>	63
	12-Step help <sup>b</sup>	51
Active in recovery <sup>b</sup>	57	

n.a.: not available.

<sup>a</sup>Toneatto et al. (1999).<sup>b</sup>Flynn et al. (2003a).**Table 4.** Summary of reasons and strategies for change and maintenance of change for gambling based primarily on Hodgins and El-Guebaly (2000); where this is not the case, the source is cited.

Gambling		Reported % of participants
Primary reasons to moderate or abstain	Negative emotions, including stress, panic, depression, and guilt	86
	Financial concerns	93
	“Hit rock bottom” (p. 783)	65
	“Self-discontinuity” (Kim et al., 2017)	n.a.
Primary strategies used to moderate or abstain	Guilt (but not shame or self-stigma; Kim et al., 2017)	n.a.
	Staying away from gambling places and friends (49%)	49
	New activities, e.g., “exercise, reading spending time with family	47
Primary maintenance strategies	Treatment (28%)	28
	“Past gambling problems recalled” (p. 786)	86
	Self-control/willpower	79
	New activities	58

n.a.: not available.

stopped within 4–5 years after becoming dependent. Winick (1962) was the first to report that most heroin addicts—about 75 percent—“matured out,” that is, stopped using by their early 30s. About a decade later, in a well-known study, Robins et al. (1975; Robins, 1993) interviewed close to 900 men returning from Vietnam. In all, 20 percent had tested positive for opiates before they left Vietnam. However, a

year later, after returning to the states, only 1 percent tested positive. Few wanted or received treatment. In contrast, Cunningham (2000) found that 91 percent of those who had met criteria for drug dependence had sought some kind of treatment.

Strang et al. (1998) followed up on 32 opiate addicts (41% using heroin and 56%, Diconal) who also sought

**Table 5.** Summary of reasons and strategies for change and maintenance of change for heroin/opioids.

Heroin/opioids		Reported % of participants
Primary reasons to moderate or abstain	n.a.	n.a.
Primary strategies used to moderate or abstain (based on Strang et al., 1998)	Changes in the route of administration, the amount used, the frequency of use, and the number of other drugs used	n.a.
Primary maintenance strategies (based on Flynn et al., 2003b)	Belief that drugs worsen life	86
	Constructive, fulfilling lifestyle	70
	Overall personal growth	73
	Need to work hard to better self	61
	Drug treatment	51
	Family support	52

n.a.: not available.

treatment but were turned away because treatment was not available. Two years later, most had received treatment from a hospital or general practitioner, and 41 percent were no longer using. Even those who were still using had changed their behaviors: many used less often, used less than when they did use and had reduced the number of drugs they were consuming, adding to the evidence that most people gradually change unhealthy behaviors.

More recently, Meghani et al. (2009) in a study of “aberrant drug-related behaviors” (ADRBs, p. 858), specifically prescription opioid pain medication abuse in chronic pain sufferers, found that nearly half (46%) of those referred to a local clinic specializing in recovery from opioids had changed their behavior 1 year later; they no longer met the criteria for ADRB.

Finally, Flynn et al. (2003b) analyzed the records from the Drug Abuse Treatment Outcome Studies (DATOS) of 432 patients in methadone programs in the United States. The study reports that only 28 percent were in recovery, but that may be due to the fact that a potential participant had to report no daily use of alcohol, no weekly cocaine use, and no illegal activity to qualify (Table 5).

**Noteworthy for clinicians.** Most people quit heroin by the end of their 30s (Robins, 1993; Winick, 1962), many if not most on their own, without professional help.

### Overeating

As noted earlier, overeating is the one type of risky health behavior that appears most resistant to change; it has been proposed that compulsive overeating, especially Binge Eating Disorder, has many similarities with addictions (Davis and Carter, 2009). Most overeaters do not lose weight and keep it off; approximately 80 percent regain the weight they have lost and many gain more, that is, (Kraschewski et al., 2010; Mann et al., 2007). That would be analogous to most moderate or controlled drinkers returning to binge or excessive drinking and many becoming alcohol-dependent.

In reality, only approximately 6 percent of drinkers become alcohol-dependent (Esser et al., 2014).

In the eating behavior literature, one focus is on what are termed “restrained” and “unrestrained” eaters (cf. Herman and Mack, 1975; Wansink and Chandon, 2014), similar to what some researchers have called “restrained drinkers” (Bensley, 1991; Collins, 1993; Collins et al., 2001; Collins and Muraven, 2007). Restrained eaters are also described as “chronic dieters” and unrestrained as “normal” eaters by Stroebe et al. (2013).

Stroebe et al. (2013) present considerable research evidence in support of their proposed “goal conflict” model of overeating. The research evidence suggests that restrained eaters/chronic dieters are caught between two conflicting goals: the “eating enjoyment” goal and the “weight control” goal. For most overeaters, many cues in a food-rich environment “prime the goal of eating enjoyment” (p. 110). As a result, thoughts related to the weight control goal are inhibited and a “preferential processing” of enjoyable eating occurs, leading to overeating. Stroebe et al. (2013) suggest that hedonic factors, that is, the pleasure associated with eating, play the key role in overeating, something very similar to what may occur in overdrinking. In the case of overdrinking, the goal of not overdrinking may fall victim to “enjoyment factors.”

However, in a minority of restrained eaters, this does not occur. The factors that explain this difference are still not understood. Cues from enjoyable looking food appear to prime for the weight control goal not the eating enjoyment goal, and those restrained eaters do not succumb to overeating and do not gain back the weight they have successfully lost. It is hypothesized that some individuals may have more working memory capacity and can therefore keep their weight control goals in mind, and some research (Houben et al., 2011; Nowakowska-Domagala et al., 2017) indicates that something similar may be occurring gradually in overdrinkers.

Marks (2015, 2016) posits that overeating is a form of dyshomeostasis and proposes a circle of discontent theory

(CODT) to help understand the worldwide epidemic of obesity. According to the CODT, the circle of discontent (COD) results from interactions and feedback loops involving complex neurochemical, physiological, psychological, and environmental components. A complex interaction of genetics and epigenetics, development issues (e.g. attachment), environmental factors (the availability of inexpensive foods high in sugar and fat) and psychological factors (e.g. pleasure, negative affect, decreased motivation), and behavioral factors (e.g. lower activity levels) all interact to form a COD, and in the case of multiple problems, for example, overeating, smoking, and alcohol misuse, potentially multiple, interacting CODs.

However, as is also true of Stroebe et al.'s (2013), the CODT does not appear to explain how or why so many millions of people lose weight and keep it off (cf. DiClemente and Delahanty, 2016). As is true for the other unhealthy behaviors discussed in this article, while the percentage may be low, millions of people change their unhealthy eating behaviors and maintain those changes. Considering that everyone eats and must eat, compared to gamble or consume alcohol or drugs, the absolute number of changers must be very large. Moreover, as humans age, their metabolism and activity levels tend to decrease. Consequently, they need fewer calories per day. Hence, those who manage to maintain their weight as they age must have changed their eating behaviors and maintained those changes. Specifically, they must be eating less or differently each day, despite the fact that fatty and sugary food has become less expensive and more available in most countries over the past 30 years. What strategies do these people use over time to break the hypothesized COD and how can we better understand this type of behavior change from a theoretical perspective?

The National Weight Control Registry (NWCR) at Brown University was established for the express purpose of changing people's perceptions regarding the inevitability of regaining weight (cf. Thomas et al., 2014). To date, more than 10,000 are registered in the United States and being tracked; 80 percent are female. To register, one has to have lost more than 30 pounds and to have kept it off for 1 year or more. On average, members have lost 66 pounds and maintained that weight loss for 5.5 years. Weight loss varies from 30 to 300 pounds. In all, 45 percent report having lost the weight on their own; 55 percent used some type of program and/or medication to do so. According to Thomas et al. (2014), 87 percent have maintained a 10 percent or more weight loss at years 5 and 10.

Kraschnewski et al. (2010) focused on long-term weight loss maintenance (LTWLM). Examining the data from the National Health and Nutrition Examination Survey of 14,306 participants aged 20–84 years, they found that 17 percent of the participants had lost at least 10 percent of their average weight, a mean loss of 42 pounds, and had kept it off for at least a year.

The findings of one study (Sutin et al., 2013) suggest that clinicians should focus more on helping overeaters learn how to better manage their emotional response to food cues (vs focusing on the negative consequences of overeating). As suggested by Marks (2015, 2016), the failure to control weight may lead to a “vicious circle” similar to that found in overdrinkers (Muraven et al., 2005a, 2005b) undermining people's tendency to become better at self-regulation as they age. Neurofeedback has some support as a way to help people learn to better manage their emotional and physiological response to food cues (Bartholdy et al., 2013; Schmidt and Martin, 2015, 2016). “Habit-based” interventions (Cleo et al., 2017), medications (NIDDK, 2017), and surgery (Dagan et al., 2017) may also be effective (Table 6).

*Noteworthy for clinicians.* The NWCR website has a great deal of useful information for persons trying to lose weight and keep it off. Creating individualized, combined programs of behavioral strategies may work best (Santos et al., 2016) and combining in-person interventions with mobile phone interventions may be beneficial (Schippers et al., 2017). As noted above, helping weight-loss clients better manage their emotional response to food cues (Bartholdy et al., 2013; Schmidt and Martin, 2016; Sutin et al., 2013) also has research support.

### Smoking

Research reports indicate that the vast majority of people stop smoking on their own without treatment or pharmacological help (Heyman, 2013; Lopez-Quintero et al., 2011). This may constitute the most convincing evidence that a very large number of people can and do change unhealthy behaviors and maintain those changes.

SAMHSA's (2014) data indicate the following change curve (Figure 3).

However, in contrast to alcohol, cocaine and heroin, changing smoking behavior takes much longer. It takes on average 24 years before 50 percent of people dependent on nicotine stop smoking, as compared to 5 years for cocaine and 14 years for alcohol (Lopez-Quintero et al., 2011).

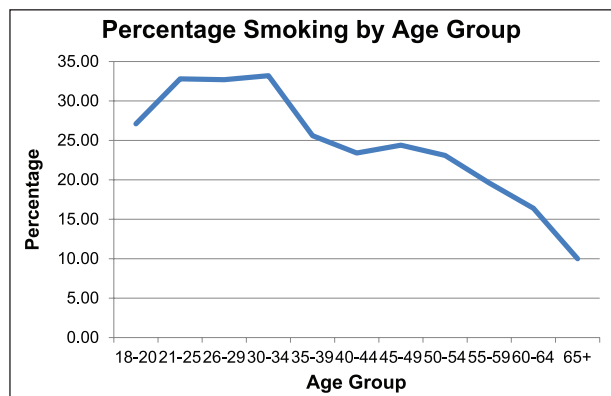
Most smokers try to quit many times. The range of reported attempts varies from 6 to 142, depending on the study and the assessment method used (Chaiton et al., 2016), with 30 or more attempts not unusual. In one study (Sobell et al., 1995) of those addicted to both alcohol and smoking, 40 percent said it was more difficult to quit smoking; 28 percent rated alcohol more difficult; 32 percent said there was no difference.

Most people abstain completely (Cohen et al., 1989). Few moderate their smoking behavior, although that may be changing as more people who smoke are casual, “social smokers” (Villanti et al., 2017) or “nondaily smokers” or “intermittent smokers” (Shiffman et al., 2015) who do not

**Table 6.** Summary of reasons and strategies for change and maintenance of change for overeating.

Overeating		Reported by % of participants
Primary reasons to lose weight (O'Brien et al., 2007)	Health concerns	50
	Appearance	35
	To improve mood	15
Primary strategies used to lose weight (NWCR, 2017)	Modified food intake	98
	Increased physical activity	94
	Establishing specific goals	n.a.
	Recorded dietary intake and/or physical activity	n.a.
Primary maintenance strategies (NWCR)	Increasing exercise, especially walking	90
	Eat breakfast every morning	78
	Weighing themselves at least one time per week (note: in contrast, Thomas et al. (2014) reported that frequent self-weighing was associated with weight regain)	75
	Watch TV less than 10 hours/week	62

n.a.: not available.

**Figure 3.** Approximate number of smokers by age group in the United States as of 2010.

smoke every day; they represent approximately 50 percent of young smokers (Berg et al., 2013; SAMHSA, 2009). Unfortunately, nondaily smoking does not lead to fewer negative health effects (Schane et al., 2010). Motivation to quit was predictive of future attempts. However, motivation was not predictive of relapse (Zhou et al., 2009), but the same researchers found that the use of medications did reduce relapses. How many smoking cessations are planned and how many unplanned are open to debate: Larabie (2005) reported that 52 percent were unplanned, but Prochaska (2011) suggests that almost 85 percent are planned.

Most smokers do not seek treatment or think it would be helpful (Chapman and Wakefield, 2013; Hammond et al., 2004). Many report quitting “cold turkey” (48%, Prochaska et al., 2011). Hammond and his associates found that 78 percent thought that they could quit on their own just as successfully with or without assistance. In all, 66 percent did not think professional counseling and 35 percent did not

think nicotine replacement therapy (NRT), that is, nicotine gum and patches, would help. However, the number of people seeking treatment increased dramatically from only 8 percent in 1986 to 20 percent in 1996, perhaps because NRT has become more widely available over the counter (Slutske, 2010) (Table 7)..

*Noteworthy for clinicians.* There appears to be no relationship between number of quit attempts and success (Cohen et al., 1989). Consequently, it makes sense for doctors, nurses, and therapists to continue to encourage clients to quit regardless of numerous past failed attempts. In most cases, withdrawal symptoms disappear after 10 days, but quitters remain vulnerable to episodic cravings, which may be triggered by environmental cues (Shiffman et al., 2006; Villanti et al., 2017). Medications may help prevent relapses (Zhou et al., 2009). In one study of 1715 ex-smokers in Norway, reasons for quitting varied significantly depending on age and gender (Grøtvedt and Stavem, 2005).

## Discussion

Despite the fact that millions of people change risky health behaviors to safer ones, it is evident that not much research has been devoted to understanding this process nor to understanding how people maintain change. If we assume that making such changes more quickly and sooner in life would be beneficial to the individuals involved as well as to society, then it is unfortunate that more attention has not been given to this issue. Moreover, with a few exceptions, little help is available for the millions of people who are trying to change their behavior gradually over time. The main exception is smoking. Considerable resources have been committed to developing medicines and changing laws, setting up government-sponsored Quitlines, and so on



**Table 7.** Summary of reasons and strategies for change and maintenance of change for smoking.

Smoking		Reported by % of participants
Primary reasons for quitting	Cost of tobacco	(Villanti et al., 2016) 64
	Present health concerns	(Gallus et al., 2013) 43
		(Larabie, 2005) 64
	Future health concerns (Gallus et al., 2013)	32
Primary strategies used to quit	Group behavior therapy (Lemmens et al., 2008)	n.a.
	“Cold turkey” (Prochaska et al., 2011)	48
	Setting a quit date (Asfar et al., 2012)	n.a.
	Nicotine replacement therapies (Lemmens et al., 2008; Rojewski et al., 2017)	n.a.
Primary maintenance strategies	Willpower to “tough it out” (Sobell et al., 1995, p. 216)	49
	Thought about negative consequences (Sobell et al., 1995)	46
	Self-help booklets (Brandon et al., 2016; Unrod et al., 2015)	n.a.

n.a.: not available.

with some success. Overeating has also received considerable attention, especially from medical centers and commercial weight-loss companies.

With regard to alcohol, drugs, or gambling, the focus has generally been on those who do not change and far less on the much larger group who do. As noted previously, Moderation Management ([www.moderation.org](http://www.moderation.org)) and Checkup and Choices exist for those who would like to cut down on their drinking (Campbell et al., 2016; Hester et al., 2005, 2009, 2011, 2013), and the enforcement of drunk driving laws has helped reduce the number of accidents due to binge drinking. In contrast, little help is offered to people who would like to moderate or stop their cocaine or heroin use without going to a treatment center. That is, for people who are not ready to abstain completely but would like to cut down their opioid and/or cocaine use, no self-help organizations or smartphone apps appear to be available. The assumption, one supposes, is that gradually moderating or changing opioid and cocaine use is not possible. However, the research discussed above strongly suggests that that is exactly how many people change their use before quitting completely.

### *Facilitating and accelerating self-guided health behavior change*

Considering the fact that millions of people change their behavior on their own without consulting a professional, what might be done to accelerate this process?

First, it is crucial that policy makers, researchers, and laypersons recognize that most humans change many difficult-to-change behaviors and maintain those changes (Calabria et al., 2010; Esser et al., 2014; Lopez-Quintero et al., 2011; Slutske et al., 2009). Many moderate a behavior rather than stopping it completely, for example, overeating, gambling, and drinking alcohol. While people may share that they have given up some unhealthy behaviors

such as smoking, they do not often share that they have given up drinking, and even less so, heroin and other illegal drugs, because of their concern about what other people may think (Heather and Stockwell, 2004). Hence, many lay people (and clinicians) may not be aware of how often such significant health behavior changes occur and are maintained.

Second, the focus on those people who fail—which may include clinicians’ inability to change one or more of their own unhealthy behaviors—may cause practitioners to be less energetic about continuously encouraging clients and patients to change. Focusing on people who have not changed may also dissuade professionals from offering newer, more appealing types of help. Therapy is perceived by many as something one makes a commitment to, especially in terms of time and money, and many people seeking to change unhealthy behaviors do not see the need for treatment and/or do not think it would help (Chapman and Wakefield, 2013; Dąbrowska et al., 2017; Edlund et al., 2009; Grant, 1997; Verissimo and Grella, 2017). Instead of therapy, brief, intermittent, as-needed consultations may be much more effective (Bishop, 2002; Glass et al., 2017).

Third, the focus on those who fail may have helped in the development of theories to explain that behavior, for example, Mark’s (2015, 2016) CODT, but it may also have contributed to the lack of theories to explain *how* people break out of CODs, that is, change difficult-to-change behaviors and maintain that change. Marks (2016) asks, “Who enters the Circle of Discontent for the first time, who stays and who leaves, and is it a revolving door?” (p. 5). However, if people manage to leave, how do they do that? Specifically, what strategies do they use, considering that we have ample evidence, except for overeating, that almost all of them do leave. The transtheoretical model of change (Diclemente, 2005; Prochaska and Velicer, 1997) attempts to address this issue, but, although very popular among

researchers and clinicians, has come under harsh criticism (cf. Sutton, 2005; West, 2005).

Fourth, to develop a better theoretical understanding of the processes involved in the health behavior changes discussed in this article, it may be time to retire the term “natural recovery,” as this is a misnomer. “Recovery” is usually used when one is recovering from a medical problem, for example, an illness or a broken bone, and it is commonly used by people who have misused alcohol and drugs or grappled with pathological gambling. That may be partly because “alcoholism” was declared a “disease” in 1991 by the American Medical Association (Morse and Flavin, 1992) and pathological gambling was included in the *Diagnostic and Statistical Manual of Mental Disorders* (3rd ed.; DSM-III) as a “disorder” and, most recently, in the DSM-5, as an “addiction.” However, drinkers with mild to moderate AUDs—the focus of this review—do not see themselves as being “in recovery.” Considering that 90 percent are not “alcoholics,” in that they are not dependent on alcohol, based on the DSM-IV criteria (Esser et al., 2014), there is no evidence that they are recovering from a serious medical disease. Smokers and overeaters also do not see themselves as “in recovery.”

“Natural recovery” and other expressions such as “spontaneous remission” and “maturing out” suggest that behavior change has come about in some sort of inexplicable way outside of a theoretical conceptualization, with little intent or effort involved. However, health behavior changes may be intentional and self-guided, as suggested by many theories, for example, self-determination theory (Ryan and Deci, 2017), the theory of planned behavior (Ajzen, 1991; Cooke et al., 2016), and temporal self-regulation theory (Hall and Fong, 2007). Hence, “self-guided change” may reflect more precisely what is involved. Most people who change unhealthy behaviors do so on their own without seeking guidance from clinicians.

Moreover, retiring such terms may help in the development of new theories of self-guided change. Such theories need to reflect the way many factors affect the processes involved in moderating or stopping risky health behaviors, including factors such as the metastability of motivational systems, conceptions of the self, intentionality, hyperbolic delay discounting, and feedback loops (e.g. Ainslie, 2016; Marks, 2015, 2016; West and Brown, 2013). Better theories may also lead to a better understanding of the commonalities (or lack thereof) underlying the processes of change and maintenance of change in different risky health behaviors. Recently, Kwasnicka et al. (2016) reviewed 100 theories of behavior change and found no “integrated theory of behavior change maintenance” (p. 115).

Fifth, medications that have been shown to be effective at helping people moderate or abstain from unhealthy behaviors, for example, lisdexamfetamine (Vyvanse) and topiramate (Topamax) for overeating and naltrexone (Rivis, Vivotrol) for alcohol misuse, need to be marketed more broadly.

Finally, more research must be focused on smartphone apps and web-based programs. They are appealing to people—in contrast to professional help and medications that, as noted above, are not frequently used—and may be compatible with people’s reported desire to “do it on their own” (Schippers et al., 2017). There is also mounting evidence that they are effective (Giroux et al., 2017; Haskins et al., 2017; Hester et al., 2005, 2009). Recently, Tulu et al. (2017) reported on the effectiveness of an app for overeating. Thomas et al. (2011) also reported that 6 months of weekly email contacts plus monthly weight reports from the participants helped speed up weight loss and maintain it. In a study related to stopping smoking, more participants who expressed a desire to quit smoking did so after a month of personalized text messages compared to the no-texts control group (Rodgers et al., 2005). A web-based, cognitive behavioral therapy (CBT) self-help program for cocaine misuse did not decrease the days abstinent, but the amount used by both the intervention and control groups decreased significantly over 6 months (Schaub et al., 2012).

With regard to alcohol-related problems, a mobile app for patients leaving inpatient care was created by Gustafson and his associates (Chih et al., 2014; Gustafson et al., 2014) and further developed by CHESS, a private mobile health company. The app not only can predict when a relapse may occur, but it also sends alerts and helpful suggestions to the users. A similar app for overdrinkers has been suggested by Bishop (2016). Dulin et al. (2014) developed a self-managed smartphone-based intervention for non-college-age drinkers (22–45). The percentage of high-risk drinking days decreased from 56 to 25 percent in those using the system; drinks per day also decreased by 52 percent. Suffoletto and Chung (2016; Suffoletto et al., 2012, 2014, 2015, 2016) in several studies with different populations and different text-messaging approaches have found SMS text messages effective in reducing heavy drinking days and drinks per drinking day. However, in a systematic review of online and mobile interventions by Giroux et al. (2017) of 3504 studies, only 18 met the review’s inclusion criteria. All but three focused on alcohol; only one on cocaine use; and none on heroin or opioid medication use, or problem gambling.

## Conclusion

Recent data regarding alcohol consumption in the United States add to the mounting evidence that millions of people change risky, unhealthy behaviors to healthier behaviors and maintain those changes (Esser et al., 2014). The same is true for heroin and cocaine misuse, gambling, overeating, and smoking (Calabria et al., 2010; Lopez-Quintero et al., 2011; Slutske et al., 2009; Thomas et al., 2014). Most of these changes appear to be self-guided. More ways to accelerate self-guided health behavior change should be developed and disseminated.

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