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Self-Help Approaches for Addictions

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Defining Self-Help

Help from without is often enfeebling in its effects, but help from within invariably invigorates. [111]

Self-help behavioral treatments encompass those strategies designed to moderate or extinguish substance use or associated negative consequences. Inherent within the definition are two fundamental and essential properties of self-help: (1) the strategies are self-initiated and self-maintained, and (2) the strategies do not involve enduring relationships with professional care providers, professional supervision or authority, or illicitly obtained prescription drugs. Under this umbrella fall techniques such as non-prescription substance substitution or replacement, bibliotherapy, helplines, spirituality and mindfulness, and Internet resources, as well as a variety of self-help groups. Each technique ranges in cost, intensity, availability, and effectiveness depending on the type and severity of the addiction. This chapter begins with a brief review of relevant literature related to self-help in addiction including reviews of natural recovery [113] and processes of change described

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in the Transtheoretical Model of Change [99]. Following description of this literature, with the exception of self-help groups (discussed in detail in Chapter "Substance Use-Focused Self-Help Groups: Processes and Outcomes"), this chapter reviews several specific self-help approaches and their applicability to various substance addictions as well as their availability to self-administrators.

Why Use Self-Help?

There are several reasons why an individual may opt for self-help methods as an alternative to professional care to manage substance use. One reason may be barriers of access to treatment. In a national telephone survey of 14,985 residents from 60 randomly selected U.S. communities, of those who reported that they needed help for substance abuse, well over one-third received no professional treatment, less treatment than they needed, or delays in treatment [119]. A common barrier to formal services for drug addiction concerns the cost of treatment, which can lead some individuals who want help, but don't believe they can afford it, to manage their own care. Stigma and the associated negative attitudes that practitioners, medical staff, and other health professional may convey toward the addicted, as well as the person's own feelings of shame or embarrassment, can also deter someone from seeking professional rehabilitation services [86]. In these instances, certain self-help methods can allow for anonymity and affordability in the recovery process.

Is Self-Help Good for Everyone?

Addictive behaviors can be modified or even terminated through self-initiated processes [99]. As described later in this chapter, individuals who were once dependent on various addictive substances have managed, through means of self-help alone, to change their behavior. Notwithstanding this, there are certain substance addictions from which it is virtually impossible or impractical to attempt to recover solely through the means of self-help. In fact, many self-help materials are not available for certain substance addictions (e.g., heroin or cocaine) without adjunct supervision from a caregiver or institution. With the exception of natural recovery (see below), heavy drug users are unlikely to recover by relying exclusively on their own resources. Therefore, most of the sections in this chapter will cover self-help methods that are available and potentially effective for substance addictions.

Self-Help as Empowering

Lacking professional guidance, self-helpers run the risk of potentially acquiring inadequate or ineffective information. However, self-help has the advantage of enabling individuals to achieve the internal resources necessary to feel a greater sense of control over their behavior and their environment. This cultivated sense of power can have positive effects on self-esteem, self-efficacy, and personal responsibility [68]. These personal tools can breed the confidence and stimulation necessary to prevent relapse or sustain the recovery process [99]. It may also motivate individuals who need extra assistance to seek professional help for their addictions [56].

Can Individuals Help Themselves?

At least two somewhat overlapping and extensive bodies of research literature have directly addressed the extent to which people can and do transition from problematic substance use, abuse, or dependence to less problematic use, moderate use, or abstinence without treatment or attendance in "self-help" groups such as 12-step affiliated programs. These bodies of literature roughly correspond to the topics of

natural recovery and the *Transtheoretical Model of Change.*

Natural Recovery

Natural recovery refers to the process by which many individuals who experience considerable difficulties related to substance use change without any formal assistance. Some individuals appear to simply "mature out", whereas others change in response to a specific event or set of circumstances. The most comprehensive review to date of natural recovery from problematic alcohol and/or drug use (excluding tobacco) considered 40 samples of participants in 38 studies published between 1960 and 1997 [113]. The majority of studies of natural recovery have focused on alcohol, with heroin being a distant second. Studies of natural recovery have largely relied on retrospective reports of participants' reasons for changing. These narrative accounts raise questions regarding potential memory distortions, self-serving biases, and/or inaccurate attributions of the effectiveness of specific factors leading to change. Nevertheless, they provide potentially important insights into successful self-help strategies. In the Sobell et al. [113] review, health concerns were the most frequently reported reason for reducing or eliminating substance use by successful self-changers, followed by financial reasons and negative personal reasons (e.g., shame and guilt). More importantly, the factor most strongly associated with successful maintenance of change was *social support*. Other factors for which successful maintenance was attributed included: *development of or return to involvement in activities not related to substance use; work-related changes; general lifestyle changes; religion; willpower*, and *changes in residential situation*. Another factor that has been consistently associated with natural recovery is *cognitive evaluation*, where individuals begin to consider that the costs of their substance use come to outweigh the benefits. In many cases, this process may correspond to maturation and may occur in different stages of the life cycle.

Maturation Effects

Related to the idea of natural recovery is the process of "maturing out". Epidemiological literature and studies of "natural history" indicate that the highest rates of alcohol and other substance use occur during late adolescence and early adulthood [107]. Increasingly referred to as "emerging adulthood", the period of time corresponding from about high school graduation through the early 20s is associated with increased risk behaviors and experimentation. A majority of young adults who use substances as part of this period, even at problematic levels, reduce or eliminate use as they assume career and family responsibilities [107]. Individuals who experience substance use later in life and who reduce use without formal help tend to be in their mid 40s and report their heaviest use to be in their mid-to-late 20s [105], further suggesting that, for many, natural recovery may be a maturational process.

With respect to research related to natural recovery, the majority of the literature has focused on alcohol. Other specific substances have also been examined in the context of natural recovery, including nicotine, marijuana, cocaine, and heroin, with relatively similar findings across substances. Natural recovery from nicotine, alcohol, and marijuana is reviewed below.

Nicotine

The vast majority (>80%) of individuals who quit smoking do so without treatment [73, 113]. Narrative accounts of successful quitters versus temporary quitters or non-quitters suggest that successful quitters report more severe consequences, more focused reasons, and more negative affect in describing reasons for quitting [46, 49]. Successful quitters also are more likely to have and/or take advantage of good social support for quitting, to change their environment, and to feel less ambivalent about changing.

Alcohol

By far the majority of the literature on natural recovery from addictions has focused on alcohol. Consistent evidence now suggests that a large proportion of individuals who experience problems with drinking are able to transition to moderate use or abstinence without formal help [105, 112]. Nevertheless, public perceptions have remained more consistent with an incurable and progressive disease model of alcoholism. These sentiments are likely reinforced by 12-step programs, which begin with the assumption that individuals are powerless over alcohol use and that it is not possible ever to recover fully but only to keep the disease at bay by remaining abstinent [20, 21].

Individuals who successfully maintain natural recovery from problematic drinking often report initial motivation related to fear or anticipation of unacceptable life changes resulting from drinking, concern for the influence of one's drinking on his or her children, and religious inspiration [13]. Successful self-changers are more likely to have positive social support networks, be married, have higher self-esteem, and report less drug use and lower frequencies of intoxication [105].

Marijuana

Relatively little research has examined natural recovery from problematic cannabis use [113]. One 25-year follow-up of Vietnam veterans found that 82.5% of cannabis quit attempts were without treatment and that 88.3% were successful [98]. Consistent with findings from the alcohol literature, a recent study examining natural recovery from cannabis use [31] found that self-change was most often initiated in response to changing views of personal use (cognitive evaluation) as well as negative effects of use. Strategies associated with successful change included changes in lifestyle and the development of interests unrelated to cannabis use.

Processes of Change

Directly related to natural recovery, "processes of change" have been described as part of the Transtheoretical Model of Change (or Stages of Change Model) [28, 99]. The Transtheoretical Model of Change, which has been extensively applied to the field of addictions and beyond, began with interviews of former smokers regarding their experiences with change. The model describes a sequence of stages in which individuals who are not initially aware of a need to change, and are not in any way considering change (pre-contemplation), over time begin to consider the possibility of change (contemplation) and subsequently prepare for (preparation) and implement change (action). In the absence of relapse or regression to previous stages, individuals are ideally able to maintain change successfully (maintenance) over time. In the context of developing their model, Prochaska and DiClemente defined a number of processes that individuals identified as being important in their efforts to change. The processes of change include substitution, seeking information, cognitive evaluation, seeking support from others, self-rewards for change, affirmation of commitment, and restructuring one's environment.

Self-Help Drug Replacement

Substance substitution represents a potentially valuable self-help strategy for drug addictions. Drug substitution focuses on replacing harmful and addictive drugs with a less harmful substance and/or often a safer route of administration. The ultimate goal is to moderate, reduce, or extinguish substance use and the various adverse consequences associated with use. Although physiological dependence particular to each substance is discussed below, it is important to note that addictions to substances common in our culture, such as nicotine, caffeine, and alcohol, often involve a psychological component that may be difficult to overcome, particularly when the substance serves a social

role in one's life. These events may act as potential environmental triggers to relapse, and actively avoiding these social situations, whether they are interactions during a cigarette or coffee break or an evening out with friends at a bar, adds to the difficulty of quitting. Drug substitutions may serve as a beneficial self-help strategy by acting to replace the function of the addictive substance and/or alleviate the symptoms of drug withdrawal. Replacement in this manner may involve significantly lower doses or a safer route of administration of the same substance of use. Although there are a number of prescription pharmacotherapies that are administered under medical supervision, this section will focus on self-help drug replacements that are available over-the-counter, and will address drug substitution and replacement therapy for three commonly used legal substances with significant addictive potential: caffeine, nicotine, and alcohol.

Replacement and Caffeine

Caffeine is a plant alkaloid found in numerous species, which acts as a central nervous system and metabolic stimulant. It is believed to be one of the most widely used psychoactive substances in the world [34]. Caffeine is typically consumed to overcome lethargy, to promote vigilance and alertness, and to elevate mood. The major source of caffeine is coffee beans, but it is also commonly found in chocolate, tea, and soft drinks, as well as in energy drinks and over-the-counter medications for headaches, pain relief, and appetite control. Although unscheduled and recognized by the Food and Drug Administration [122] as a "safe food substance", caffeine is an addictive substance that can potentially lead to withdrawal symptoms after cessation of consistent use. Caffeine may be commonly overlooked as a drug of abuse, in part due to its nearly universal legal status and prevalence as a normative food staple. Furthermore, there is a great potential that people may be unaware of, or may underestimate, their daily caffeine consumption, as the drug is mainly associated in connection with coffee. These factors together may contribute to the development of caffeine dependence.

The *Diagnostic and Statistical Manual of Mental Disorders*, 4th Edition–Text Revision recognizes four caffeine-related disorders: caffeine intoxication, caffeine-induced anxiety disorder, caffeine-induced sleep disorder, and caffeine-related disorder not otherwise specified. The symptoms of acute caffeine intoxication may include restlessness, nervousness, hyperexcitability, insomnia, gastrointestinal disturbance, muscle twitching, rambling, tachycardia, and agitation. Very rarely, high doses of caffeine (>10 g) may produce respiratory failure or seizures. Regular users commonly develop tolerance to caffeine and may experience intense cravings after discontinuation. Withdrawal symptoms include headaches, flu-like symptoms, feelings of lethargy and reduced motivation, and depressive or irritable mood.

Individuals seeking to abstain from caffeine may find that the cravings can be managed by substance replacement. Because caffeine is less addictive than are other socially acceptable substances (e.g., alcohol or nicotine), replacement in social settings may be more easily achieved, providing a particularly effective way to reduce caffeine use and mitigate adverse health consequences. The most popular replacement for caffeine is decaffeinated coffee, which contains roughly 3 mg of caffeine per cup compared with an average of 85 mg per cup of regular drip coffee. International standards require that decaffeinated coffee beans are 97% free of caffeine, while the European Union standard requires beans that are 99% caffeine free by mass. This small amount of the active substance may help attenuate withdrawal symptoms including headaches, nausea, vomiting, muscle pain, and stiffness. Decaffeinated and herbal teas offer another option for caffeine replacement. Those individuals who are interested in reducing caffeine intake from soft drinks have a variety of brand options offering caffeine-free drinks. Although there is scant literature concerning the effectiveness of decaffeinated substitution for

caffeine use, replacement in this manner can be a helpful harm reduction approach to reduce significantly one's intake of the drug (in the case of decaffeinated coffee) or to eliminate intake altogether.

Replacement and Nicotine

Nicotine, another central nervous system stimulant, is a plant alkaloid found most abundantly in tobacco leaves and is thought to be the main factor responsible for the dependence-forming properties of tobacco smoke. Although inhalation of tobacco smoke is the most common route of nicotine administration, tobacco also may be insufflated or chewed. Tobacco smoke contains carbon monoxide, as well as a mixture of particulate substances generated by the combustion process that make up tobacco tar [34]. Inhalation of carbon monoxide and tar is primarily responsible for the various diseases resulting from long-term use. Researchers regard nicotine as one of the most addictive recreational substances in use [50, 51]. Similarly, the American Heart Association considers nicotine to be one of the hardest addictions to break.

According to the *Diagnostic and Statistical Manual of Mental Disorders*, 4th Edition–Text Revision, the criteria for nicotine use disorder include any three of the following within a 1-year time span: tolerance to nicotine with decreased effect and increasing dose to obtain the same effect, withdrawal symptoms after cessation, smoking more than usual, persistent desire to smoke despite efforts to decrease intake, extensive time spent smoking or purchasing tobacco, postponing work, social, or recreational events in order to smoke, and continuing to smoke despite health hazards. Additionally, nicotine withdrawal is classified as a nicotine-induced disorder that includes symptoms such as difficulty concentrating, nervousness, headaches, weight gain, decreased heart rate, insomnia, irritability, and depression.

Because a majority of serious health hazards related to nicotine use result from smoking tobacco, nicotine replacement through other modes of administration may provide a successful harm reduction substitute. Such approaches are based on the concept that the administration of a maintenance level in a non-toxic format will alleviate the withdrawal symptoms associated with smoking cessation and reduce the risk commonly associated with the inhalation format. Indeed, nicotine replacement therapy may aid in abstinence from tobacco smoking by reducing general withdrawal symptoms, resulting in some psychological effects on craving, mood, and attention states [87, 115]. There are a number of nicotine replacement options available over-the-counter for individuals who are interested in smoking cessation. Unlike inhalation of tobacco, nicotine replacements lead to slower onset and more stable plasma nicotine concentrations [52]. Thus, the use of nicotine replacement therapy allows for the accurate titration of nicotine dose and enables a reduction of daily nicotine administration over time. A recent comprehensive review of nicotine replacement concluded that each commercially available form of nicotine replacement therapy increased significantly the rate of cessation over the placebo or no-nicotine-replacement-therapy groups and that these rates of quitting smoking increased by 50–70% [115]. Preliminary data from this review suggest that individuals who begin nicotine replacement therapy soon before their quit date may increase their success [115]. Additionally, the authors mention that there is evidence of a benefit from combining the nicotine patch with an acute dosing type (for acute cravings). Finally, they conclude that to date, there does not appear to be an overall difference in the effectiveness of any form of nicotine replacement therapy over another and, thus, the choice of which form to use should reflect an individual's specific needs and tolerability [115].

Nicotine Replacement Options

Nicotine-containing chewing gum was approved by the FDA as a pharmacotherapeutic prescription medication for use in the treatment of cigarette dependence in 1984. Now available over-the-counter in both 2-mg and 4-mg doses,

the gum leads to nicotine absorption (~50%) in the mouth through the buccal mucosa. Nicotine gum also contains 30 mg of sodium carbonate and sodium bicarbonate to enhance absorption of nicotine [50]. Individuals are instructed to chew the gum until it is soft and a peppery taste is felt, after which it is pressed between the cheek and teeth until the taste fades. Then the process is repeated. This procedure, known as "chew and park", seeks to maximize absorption of nicotine. Although individuals are instructed to chew the gum as needed, they are typically encouraged to chew at least 10 pieces/day (at a rate of 1 piece every 1–2 h) but are advised not to exceed 20 pieces of 4-mg gum or 30 pieces of 2-mg gum per day. A schedule of 10 pieces of 2-mg gum yields approximately 10 mg of nicotine, while the same number of 4-mg pieces yields approximately 20 mg/day. As the average nicotine intake per cigarette smoked is roughly 1 mg, chewing 10 pieces achieves about one-third to one-half the daily nicotine intake of a user who smokes 30 cigarettes/day [8]. A number of studies have demonstrated that the use of nicotine chewing gum when quitting smoking approximately doubles the rate of abstinence compared with placebo [54, 57, 106]. A recent comprehensive review of 53 trials assessing nicotine gum versus placebo concluded that the use of nicotine replacement gum alone significantly increased rates of abstinence [115]. Furthermore, heavy smokers have been shown to achieve greater benefit from the 4-mg gum [87, 115]. Potential side effects of chewing nicotine gum may include hiccups, nausea, indigestion, mouth sores, jaw muscle aches, headaches, dizziness, and insomnia.

The nicotine lozenge was first introduced in 2002 as another over-the-counter alternative for nicotine replacement therapy. The lozenge is a hard candy that releases nicotine slowly as it dissolves in the mouth and is available in the same 2 and 4-mg concentrations as the nicotine chewing gum. Individuals are instructed to use one lozenge at a time and to abstain from food or drink in the 15 min prior to and during use. Only one lozenge should be used at a time because using too many lozenges in a short time may increase the incidence of side effects such as heartburn and nausea. One should allow the lozenge to dissolve slowly (for up to 30 min) in the mouth, being careful not to chew or swallow the lozenge. During the first 6 weeks of nicotine lozenge treatment, individuals are advised to use one lozenge every 1–2 h. After this time, consumption is encouraged to be systematically restricted to one lozenge every 2–8 h. Heavy smokers and/or smokers who have their first cigarette within 30 min of awakening are encouraged to use the 4-mg lozenge. Consumption should not exceed 5 lozenges in any 6-h period. Similar to the nicotine gum, there is a recommended limit of 20 lozenges/day, and use is advised for up to 12 weeks. The most common potential side effects resulting from the use of the nicotine lozenge are soreness of the teeth and gums and throat irritation.

Transdermal nicotine patches, although first introduced in 1991, were marketed as an over-the-counter aid for smoking cessation starting in 1996. They consist of multilayered adhesive patches saturated with a lipid-soluble nicotine solution, leading to relatively stable transdermal delivery of nicotine throughout the day. Nicotine patches are currently available in doses ranging from 5 to 20 mg for duration of wear from 16 to 24 h. Patches come in several steps, enabling users to gradually phase out their use. This replacement method provides a continuous-release, long-acting mode of nicotine administration, resulting in relatively constant plasma levels of nicotine that are slightly lower than the concentrations produced by nicotine chewing gum. While wearing a nicotine patch, individuals are warned of the importance of abstaining from smoking as this may lead to nicotine overdose, potentially resulting in adverse cardiovascular events [34]. A number of reviews have documented that nicotine patches are a highly effective form of replacement resulting in a greater number of abstainers than placebo treatment [38, 39, 115]. A comprehensive meta-analysis found borderline evidence of a benefit of using the higher dose compared with the lower dose patch and further suggested that although the transdermal nicotine patch is generally easier to use than

other forms of nicotine replacement therapy, the patches are not effective for relief of acute cravings [115]. Potential side effects resulting from use of the nicotine patch may include skin irritation, dizziness, elevated heart rate, sleep disturbances, headache, nausea, vomiting, muscle aches, and stiffness.

Replacement and Alcohol

Alcohol is a psychoactive drug that acts as a central nervous system depressant and is a product of the metabolism of carbohydrates converted through the process of fermentation. Moderate consumption of alcohol decreases pain and anxiety, produces relaxation, elevates mood, and stimulates appetite. In higher doses, alcohol promotes drowsiness, reduces motor coordination and self-control, may lead to emotional volatility, memory impairments, and confusion, and can be fatal at extreme doses. Roughly three in four Americans are occasional drinkers, individuals who consume one or two drinks to "unwind" after a long day or participate in moderate alcohol consumption at social gatherings such as dinners and celebrations. This pattern of drinking is practiced by a majority of alcohol users without serious harmful consequences or development of dependence [34]. Conversely, the National Institute on Alcohol Abuse and Alcoholism states that roughly 1 of every 12 adults in America abuses alcohol or is alcohol dependent.

Alcoholism is defined by *The Journal of the American Medical Association* characterized by impaired control over drinking, preoccupation with alcohol, use of alcohol despite adverse consequences, and distortions in thinking [83]. Alcohol dependence includes the four symptoms of craving, loss of control over use, physical dependence, and tolerance as outlined by the *Diagnostic and Statistical Manual of Mental Disorders*, 4th Edition–Text Revision. Mild-to-moderate symptoms of alcohol withdrawal are numerous and include nervousness, anxiety, irritability, depression, fatigue, headache, nausea and vomiting, and insomnia. Severe symptoms can be extremely dangerous and include delirium tremens (state of confusion often accompanied by hallucinations), fever, and convulsions.

Alcohol abuse can be extremely difficult to overcome, possibly requiring intensive medical treatment. There are currently three oral medications approved to treat alcohol dependence that are available by prescription under medical supervision. While it is highly recommended that an individual seek medical help for alcohol addiction, there are harm reduction measures that one may take for alcohol self-help. When dealing with alcohol abstinence, non-alcoholic beverages such as near beer and alcohol-free wine may serve as an effective replacement. These substitutes typically contain one-half of one percent or less of ethanol by volume—i.e., the maximum content that a beverage may contain to be legally called non-alcoholic in the United States. In addition to the strong pharmacological dependence, overcoming alcohol addiction can be difficult to overcome psychologically, in part because the environment associated with the substance may serve an important social role in one's life. The use of non-alcoholic replacement may help in the maintenance of abstinence by allowing an individual to continue to engage in social situations.

Drug substitution for alcohol may also be achieved with the use of herbal substances. As another legal central nervous system depressant and mild intoxicant that shares similar properties with alcohol, kava (piper methysticum) root is consumed in Pacific culture to alleviate stress and combat insomnia and has been demonstrated to be effective in reducing anxiety [95, 123]. Although there are no data concerning the effectiveness of kava use as an aid to quitting alcohol, the anti-anxiety and mildly intoxicating effects of kava may prove useful by replacing the role of alcohol in one's life and potentially mitigating some of the less severe symptoms of alcohol cessation. There is a clear lack of controlled studies concerning the effectiveness of drug substitution for substances other than nicotine and a need for direct investigation of this potentially useful strategy.

Bibliotherapy

Perspectives in Bibliotherapy

Bibliotherapy, the concept that positive change can be affected through an individual's relationship with the content of books or other written words, has been a recognized method of self-help throughout history [103]. In historic and contemporary cultures, religious materials such as the Bible serve as enduring and prominent examples of self-prescribed tools for growth and change. The concept of bibliotherapy has changed over time such that modern references may describe a spectrum of behaviors, from an individual reading a self-help manual to a professional care provider prescribing a relevant book chapter. The terminology has similarly evolved, revealing an array of alternative terms including but not limited to: biblio-counseling, bibliopsychology, biblioguidance, bookmatching, information prescription, library therapeutics, and literatherapy. At its most basic, the practice of bibliotherapy consists of a self-prescribed selection of reading materials that have relevance to an individual's life and situation. It also refers to the guided use of literature toward a desired therapeutic outcome, usually as a complement to traditional psychotherapeutic approaches [58].

Evaluating the efficacy of bibliotherapy proves more challenging than reporting on its varied uses. For the purposes of this chapter, and consistent with a number of published studies [5, 70], the term bibliotherapy will refer to the first situation, or any therapeutic intervention presented in a written format, which is designed to be read and implemented by an individual largely in the absence of professional guidance. Those empirical investigations employing congruent definitions of bibliotherapy related to substance abuse were restricted primarily to the reduction of nicotine, alcohol, and marijuana.

Bibliotherapy for Nicotine

A vast array of self-help materials designed to promote smoking cessation exist [43], from brief motivational pamphlets (e.g., American Cancer Society [2]) to comprehensive manuals addressing initial cessation through relapse prevention (e.g., American Lung Association [3]). These manuals are often based on cognitive behavioral models (e.g., social learning, transtheoretical model, and relapse prevention) and designed as translations of therapist-administered multicomponent cessation programs. Despite the assortment of literature available, the evidence for the efficacy of these resources is mixed (cf. [26]).

Although individuals who are interested in smoking cessation appear to prefer self-administered treatments such as bibliotherapy [37], research has not consistently demonstrated the ability of such materials to increase cessation rates above that of population quit rates [36], telephone counseling [25, 90], or nicotine replacement therapy [61]. This failure may be due at least in part to the populations used to evaluate self-help techniques, the majority of which have involved volunteer smokers who tend to be older, more addicted, and less confident and to have less social support than the general population of smokers [125]. Thus, the full potential of self-help interventions may not be reflected in this population, who would likely benefit from more intensive interventions [23].

With certain caveats, research has supported the efficacy of self-help interventions involving bibliotherapy for smoking cessation. Curry [23] notes that self-help materials are as effective as intensive group programs when individuals participate in the prescribed activities associated with the reading. With this qualification, the use of self-help materials is associated consistently with higher abstinence rates at initial and long-term follow-ups (cf. [23]). Some research suggests that this may be due to compliance with the program, inasmuch as individuals who are able to use self-help programs successfully are better able to adapt programmatic change into long-term lifestyle changes [24].

Bibliotherapeutic efficacy appears to be increased in some cases by tailoring the cessation materials to individual characteristics (e.g., stages of readiness to quit) relative to more general cessation materials [100]. Thus, a number of recent studies have investigated the influence of

tailored bibliotherapeutic resources, with varying degrees of success. For example, although attempts to tailor written material to firefighters by employing language common to the fire service did not produce benefits beyond the American Lung Association's guide [3] designed for the general public [89], the combination of tailored smoking outcome and self-efficacy-enhancing information produced a significant effect on smoking abstinence [29]. The most promising effects for bibliotherapeutic interventions appear to be found in combinations of personalized adjuncts, such as written feedback in conjunction with outreach telephone counseling [25, 90]. Thus, bibliotherapeutic interventions' greatest efficacy may be as an important component of a more comprehensive minimal-intervention smoking cessation strategy.

Bibliotherapy for Alcohol

Bibliotherapy materials designed to reduce at-risk and maladaptive alcohol use are conceptually similar to smoking cessation publications in that they are also often based on cognitive behavioral models, which are intended as translations of multicomponent, therapist-administered programs. Consistent with the smoking cessation literature, the evidence regarding these resources is mixed but appears promising, particularly when construed as the initial intervention in a stepped-care approach to alcohol treatment [70, 114].

Meta-analytic reviews of self-help programs designed to address maladaptive alcohol use have revealed differentially effective rates, largely dependent on the nature and severity of the treatment target. Some research suggests that maladaptive alcohol use may not be as amenable to bibliotherapeutic interventions relative to other problematic behaviors. A number of meta-analytic reviews found smaller effect sizes for bibliotherapeutic interventions addressing disruptions of "habit control" (i.e., alcohol consumption, smoking, nail biting, and overeating) relative to other treatment issues, such as mood disorders [45, 108]. In addition, a study conducted by the World Health Organization [129] found that among heavy drinkers, bibliotherapy alone was not as effective as bibliotherapy in conjunction with brief advice or counseling. Thus, some research suggests that bibliotherapeutic interventions may be more amenable to other clinical considerations, and, particularly among heavy drinkers, a more intense treatment approach may be required.

Despite these considerations, a number of studies support bibliotherapeutic interventions, particularly for mild alcohol abuse. In their 2003 review, Mains and Scogin [70] note that bibliotherapeutic interventions are better suited to address cases of mild alcohol abuse, with less proven efficacy for moderate-to-severe alcohol abuse. Moderate support was revealed for bibliotherapy in a recent meta-analysis of 22 studies evaluating self-help programs [5]. Overall, self-help treatments were found to result in decreased rates of at-risk and harmful drinking, and a small-to-medium-size effect for bibliotherapy relative to no-treatment controls was found. In a series of studies involving only limited professional contact (i.e., brief telephone contact and one 1-h session), Miller and colleagues found reductions in alcohol consumption associated with a self-help manual that matched reductions associated with more involved treatment options [78–80], which were found to be enduring at 2 [77] and 8 years [81].

In sum, although the research regarding bibliotherapeutic interventions for maladaptive alcohol use appears promising, several caveats exist. Bibliotherapeutic interventions have the benefit of being non-intrusive and inexpensive and, based on existing research, are perhaps best framed as an initial intervention in a stepped-care approach to mild or moderate alcohol abuse [70]. Consistent with the stepped-care approach, initial treatment failures or presentations involving more severe alcohol abuse may be best addressed with more intense and sophisticated interventions [109, 114].

Bibliotherapy for Marijuana

Based on a review of the literature to date, it is difficult to come to any sound conclusions

regarding the utility of bibliotherapy as an intervention for marijuana, particularly as a standalone intervention. Cunningham [18] reported that a mental health survey conducted in Canada revealed that individuals acknowledging weekly cannabis use were more interested in receiving an evaluative self-help book or a computerized normative use summary than telephone counseling or individual psychotherapy. This finding appears to suggest that similar to that for alcohol users, bibliotherapy may be a viable initial outreach intervention in a stepped-care approach among cannabis users. Cannabis users may be well suited to such minimally intrusive interventions since the majority, including those who meet the criteria for dependence, will never seek treatment [17]. However, further research is required to elucidate better the appropriateness and enduring benefits of bibliotherapy within this population.

Helplines

A helpline is a telephone-based service that provides help, information, support, and advice to callers with a wide range of problems or concerns. Common areas of service include financial advising, mental health, relational issues, technological support, and the focus of this chapter, substance addictions [40].

Helplines offer a variety of distinct advantages unique to other forms of self-help, which may make them more accessible or appealing than seeking face-to-face counseling or professional treatment. Helplines provide an efficient means for delivering treatment to populations across wide geographic areas by eliminating barriers of access (e.g., transportation, child care, or scheduling conflicts). Many helplines are government funded and free of charge to callers, which enables them to reach more underserved populations (e.g., uninsured or low socioeconomic status) [4, 9, 91]. Finally, helplines provide immediate treatment and support while preserving the caller's anonymity, a feature that may attract drug users who are already battling with the stigma associated with their drug use [55].

Helplines for Different Types of Addiction

Helplines for Nicotine

The majority of published research on substance-abuse helplines has focused primarily on nicotine dependence, often referred to as "quitlines". Therefore, the bulk of this section will be devoted to the evidence-based literature regarding quitlines. Quitlines took off in the early 1980s and have since spread throughout North America, Europe, parts of South America, Asia, Australia, and South Africa [4].

Nicotine Helpline Services

At a minimum, the majority of quitlines offer self-help resources and other mailed information to callers. This is the most ubiquitous and standard service provided by quitlines. Another common feature includes reactive smoking cessation counseling—reactive in the sense that the call is initiated by the smoker, who is able to speak with a counselor. Other services may include proactive counseling (counselor calls the client), replacement or cessation medication, chat rooms, and recorded messages [9, 59, 91].

Characteristics of Nicotine Helpline Callers and Specific Protocols

In general, smokers are four times more likely to use quitlines than face-to-face clinics [59, 130]. A recent study [91] examining the characteristics of callers to a national reactive telephone quitline found an overrepresentation of disadvantaged (i.e., African-American, women, poorer, urban, less educated, older) and heavier smokers compared with the general population. Due to the wide range of consumers, many quitlines have adopted specialized protocols to address the unique concerns of specific populations. Common specialized protocols exist for pregnant women, older adults, adolescents,

ethnic minorities, smokeless tobacco users, and callers with multiple addictions [16, 121].

Nicotine Helplines and the Transtheoretical Model of Change

Although individuals committed to smoking cessation appear to benefit most from quitline support, research suggests that quitlines may be efficacious for individuals in a wide range of readiness to change. Previous research suggests that many first-time callers to smoking quitlines have already made plans to quit, and that these individuals tend to benefit most from the quitline intervention [48]. Helgason and colleagues found that 22% of first-time callers were in the action stage (had quit for 6 months or less), 76% were in the preparation (planning to quit within the next 4 weeks) or the contemplation (interested in trying to quit within the next 6 months) stage, while only 2% were in the pre-contemplation stage (not interested in trying to quit within the next 6 months). Although those who were smoke free (action/maintenance) at the start of the intervention had the highest likelihood of being abstinent at the end of the study, there were also positive outcomes for callers in the other three stages. Half of the first-time callers in the pre-contemplation stage advanced to either the contemplation or the action/ maintenance stage by the end of the quitline intervention. Similarly, for those in the contemplation stage at baseline, half progressed to either the preparation stage or the action/maintenance stage, while only 10% (i.e., 1 of 10) regressed to an earlier stage [48]. Interestingly, although this research suggests that quitlines can help move callers from one stage of change to the next (e.g., from contemplation to action) [48, 92], many quitlines in the United States restrict services to callers who are planning to quit [16].

Helplines for Alcohol

Despite the abundance of alcohol helplines, there is a surprising dearth of research on their protocol, services, or effectiveness. In a controlled experiment based in Wisconsin [12], researchers recruited nearly 900 patients from clinic waiting rooms who were not necessarily seeking help for their drinking problems. Half of the participants received pamphlets about healthy living, while the remaining participants received telephone counseling in which counselors assisted in setting drinking goals and overcoming barriers to behavioral change. Telephone counseling reduced alcohol consumption by 17.3% for men and 13.9% for women, compared with 12.9 and 11%, respectively, for pamphlet-only conditions [12].

The most promising research on alcohol helplines has been conducted on the UK telephone-based service known as "Drinkline". Established in 1993, Drinkline receives about 6,000 calls a month, the majority of which are problem drinkers seeking help for themselves. Callers are given information about safe drinking levels, advice about how to control drinking or avoid alcohol, and suggestions for how to overcome any related problems. A survey of callers showed that 81% received the information that they needed and 91% intended to carry out a plan of action after calling Drinkline [127]. An extensive search failed to identify any comparable literature for alcohol helplines in the United States.

Helplines for Anabolic-Androgenic Steroids

One of the most advanced, established, and researched helplines that specializes in steroid use is the Anti-Doping Hot-Line founded by Swedish health authorities with the support of the Swedish National Institute of Health [30]. This helpline provides information about side effects and risks associated with anabolic-androgenic steroids, as well as facilitating contact between users and health care agents. The telephone service not only reaches out to anabolic-androgenic steroid users and concerned family and friends but also informs health professionals and organizations (e.g., public schools) about doping issues. In fact, the

majority of callers to the Anti-Doping Hot-Line are non-abusers [30]. Since the implementation and subsequent success of this Sweden-based helpline in 1993, Japan and other nations with high rates of anabolic-androgenic steroid abuse have followed suit with their own steroid helplines (primarily targeting athletes and adolescents) [121].

Helplines for Cocaine, Methamphetamines, and Opiates

Due to the highly addictive and harmful nature of drugs like cocaine, methamphetamines, and opiates, strictly outpatient and self-help methods of recovery, such as helplines, are less common. Tellingly, there is nominal research on the topic. However, 24-h, 7-days-a-week phone services do exist (e.g., National Meth Helpline, Cocaine Addiction Helpline, and Heroin Addiction Helpline) that offer no-cost assessments and dispense advice on how to stop, how to help a loved one quit, interventions, information, and various signs to look for in a potential addict. Upon calling these helplines, however, the most likely intervention is a referral to an inpatient treatment and drug rehabilitation facility.

Helplines as Self-Help

Helplines ride a fine line between self-help and assisted interventions. On the one hand, many first-time callers to drug abuse helplines have taken proactive and self-initiated measures to make the call. From there, it is often up to the caller to decide the extent or breadth of services that he/she desires. Staying within the definition of self-help, callers can have a few questions answered or request that some information be sent to their homes. Helplines start to cross over into the zone of assisted, professional help when multiple counseling sessions are involved, the individual is referred to the helpline by a hospital or medical professional, or the caller enters proactive counseling with multiple phone sessions initiated by the counselor.

Religion, Spirituality, and Meditation

The last decade has been witness to significant increases in research investigating the influence of religion and spirituality on physical and mental health, including addiction. Religion and spirituality are innately internal endeavors, albeit ones that often include corresponding external activities and, to varying extents, enduring relationships with professional providers and larger communities. A review of the literature did not produce research evaluating the role of religion or spirituality in recovery from dependence or addiction in a traditional, empirical fashion. The absence of such literature makes intuitive sense as it would be challenging to assign a random sample to a religion or spirituality condition or the absence thereof. However, given the emergence of significant research regarding these constructs in addiction, it is important to include a discussion of relevant findings. Thus, this section will include a brief review of contemporary literature on religion and spirituality in the sense that these constructs are self-initiated and self-maintained and are not externally imposed by scientists, physicians, or secular care providers. Additionally, this section will address empirical research involving meditation, which has received more recent attention as an intervention tool for addictions [10, 128].

Religion and spirituality are conceptually distinct constructs although they share some common features. For the purposes of this chapter, definitions of religion and spirituality will be based on those in the *Handbook of Religion and Health* [65] and consistent with existing literature [42]. Religion is defined as an organized system of beliefs, practices, rituals, and symbols designed to facilitate a relationship with the transcendent or sacred as well as with the greater community. Spirituality is defined as a less formal and more personal quest for

meaning, designed to address questions about life and one's relationship with the transcendent or sacred.

Religion, Spirituality, and Nicotine

Although previous research has found that both religion and spirituality act as protective factors against smoking onset [41, 44, 74], their utility as self-administered, independent interventions is less clear. Koenig and colleagues [64] found that among the elderly, individuals with a strong religious commitment were less likely to have ever smoked and, among those who did smoke, were likely to consume fewer cigarettes. With regard to smoking cessation, a review of the literature revealed one study examining religion as an intervention strategy. An intensive, culturally and religiously specific smoking cessation intervention designed to be conveyed through local churches for rural African Americans was more likely to promote positive movement in readiness to change than was a tailored, minimal self-help intervention [124]. The rituals and community associated with religion appear to have been instrumental agents for change in this population. However, these findings may better support the role of the church as a dissemination point for proactive health interventions rather than the efficacy of religion as a self-administered intervention. Further research is required to better identify the role of religion and spirituality as an independent, self-administered intervention for smoking cessation.

Religion, Spirituality, and Alcohol

Religion and spirituality appear to be influential in resiliency against maladaptive patterns of alcohol use as well as smoking. A substantial body of research delineates the protective role that religion [60, 62] and spirituality (cf. [76]) play in resiliency against alcohol use disorders. Lower rates of alcohol use disorders have been associated with private practices of prayer and scripture reading [63]. Consistently, research has demonstrated that alcohol-related negative consequences and alcohol use disorders among the highest-risk religious group, drinking members of conservative Protestant denominations [63, 71], are still only 40% of those for drinkers without religious affiliation [53].

In addition, the absence of religion or spirituality may be a risk factor for developing abusive and addictive patterns of alcohol use. Individuals with alcohol and drug problems generally report lower religious commitment and involvement relative to the general population [67, 126]. Consistent with these findings, descriptive studies suggest that individuals with alcohol and drug problems believe that receiving spiritually focused treatment would be helpful to their recovery [6, 27].

A number of sources suggest that religious or spiritual growth is an influential element in lasting recovery and a healthy life. Alcoholics Anonymous [1] frames addiction as a physical, mental, and spiritual disease requiring treatment in all three domains, the latter of which is an identified treatment stage (i.e., spiritual affiliation and growth) in their model of healthy and stable sobriety. Previous research has found that Alcoholics Anonymous members' spirituality is positively associated with life satisfaction [15], purpose in life, and duration of sobriety [14, 96]. Similarly, a study of individuals in recovery found that higher levels of religious faith and spirituality were associated with a more optimistic life orientation, greater perceived social support, higher resiliency to stress, and lower levels of anxiety [93]. Some speculate that inasmuch as religion and spirituality are protective against addiction, adoption of religious or spiritual variables may facilitate the process of recovery [84].

Religion, Spirituality, and Other Substances

Consistent with the alcohol literature, religion and spirituality appear to have protective influences against the onset of illicit drug use among

adolescents [75] and adults [41, 44, 74]. Also analogous to the alcohol literature, a lack of religious commitment may be a risk factor for illicit drug use [62]. Finally, the current literature regarding religion and spirituality and recovery from illicit drug abuse and addiction appears to be at a similar stage of development, where positive indications have been found to be associated but not yet fully elucidated.

Previous research suggests that religious and spiritual involvement exerts a positive influence in drug treatment. A recent study examining spiritual activities among heroin- and cocaine-dependent individuals revealed a weak but positive ($r = 0.16$, $p < 0.04$) association between spirituality and treatment outcome [47]. Individuals in this study who reported that they frequently spent time on religious or spiritual activities demonstrated significantly better outcomes in terms of subsequent drug use and treatment retention. Spirituality also has been associated with reduced severity of post-treatment relapses [82] and counselor-assessed treatment responsiveness [94]. In a study examining the effectiveness of coping techniques to reduce cocaine use after treatment, spirituality was one of a number of techniques associated with less cocaine use and abstinence at a 6-month follow-up [102]. While these studies are promising, they do not address the role of religion and spirituality independent of formal treatment. As such, questions remain about the utility of religion and spirituality as an independent, self-administered mechanism of change for addictive disorders.

Meditation and Mindfulness-Based Approaches

Meditation has been a spiritual and healing practice in some parts of the world for more than 5,000 years. It also has become an increasingly common practice in Western cultures within the last 40 years. In the recent past, meditation and mindfulness-based approaches to substance use disorders have received a resurgence of attention in the empirical literature and popular press. Consistent with the National Center for Complementary and Alternative Medicine, a division of the National Institutes of Health, meditation will be referred to as those techniques or practices intended to focus or control attention [85]. Similar to religion and spirituality, meditation has been characterized and defined a number of ways in the literature, often confusing the empirical picture. Also analogous to the findings on religion and spirituality, research has revealed some initial support for this technique in substance use disorders [11, 72] although a number of important questions remain.

Previous research suggests that meditation and mindfulness-based approaches to substance use disorders hold promise as a protective mechanism, intervention technique, and self-help approach. Research has demonstrated the protective influence of transcendental meditation against alcohol use disorders [7, 110]. Furthermore, some research suggests that transcendental meditation may be an effective coping technique for those at risk for developing alcohol use disorders. In a study evaluating various forms of relaxation techniques (transcendental-esque meditation, deep muscle relaxation, or quiet recreation) on patterns of heavy alcohol use among college students, Marlatt and colleagues [72] found that each technique produced reductions but that meditation demonstrated the most consistent and reliable reductions over a 6-week intervention period, an approximate 50% reduction in daily consumption. Similarly, among an incarcerated population, Bowen and colleagues [10] found significant reductions in alcohol, marijuana, and crack cocaine use post-incarceration among individuals who had participated in a Vipassana meditation course in conjunction with standard alcohol and drug classes. Those who completed the Vipassana meditation course also demonstrated decreases in self-reported psychiatric symptoms and increases in positive psychosocial outcomes. Successful addiction recovery is often related to an individual's ability to develop and employ a repertoire of coping behaviors. This research suggests that meditation may be an effective coping tool and thus may extend the duration of treatment effects by providing the skills to

prevent relapse [10, 11, 128]. However, questions remain about the mechanisms promoting change associated with meditation (cf. [128]).

In sum, existing research appears to support the positive influence of religion, spirituality, and meditation in a multidimensional approach to recovery from substance use disorders. In general, religion, spirituality, and meditation appear to increase resiliency against abuse and addiction. More specifically, religion and spirituality are associated with increased personal satisfaction and resiliency in recovery from alcohol use disorders, and all three are associated with decreased use following treatment among other substance use disorders. Thus, it seems practical to consider the positive impact of religion, spirituality, and meditation in self-initiated endeavors to address substance use disorders. However, further research is required to elucidate the influence of these constructs distinct from formal treatment and treatment groups, and to evaluate their efficacy as stand-alone interventions. Thus, although they may play a positive and potentially significant role in recovery, it is not yet understood how and in what ways religion and spirituality [76, 93] or meditation act to promote positive change (cf. [128]) and whether those effects will extend to self-initiated and self-maintained treatment.

Internet Resources

Recent years have witnessed a logarithmic expansion of reliance on the Internet for all types of health-related information. In 2004, an estimated 15% of all Internet users accessed health information related to problems with drugs, alcohol, or help in quitting smoking, corresponding to over 15 million individuals [116]. Research evaluating Internet self-help Web sites and brief interventions has expanded similarly in recent years. The bulk of the research in this area has demonstrated that the Internet is a feasible and potentially efficacious source for self-help. Relatedly, a recent meta-analysis evaluating 75 randomized controlled trials of computer-based interventions revealed that Internet interventions were associated with increased knowledge and changed attitudes across a wide variety of behaviors [97]. More specifically, the review found Internet-based interventions, in comparison with other methods of delivery, to be effective in changing tobacco use but less successful in changing the use of other substances.

A number of advantages of Web-based self-help resources have been identified, including, most notably, convenience, low/no cost, availability, and anonymity. The number of Web sites relevant to self-help for addictions is overwhelming in comparison with the relatively small burgeoning literature on Internet self-help. A quick Google search (May 21, 2008) on the phrase "quitting smoking" revealed over 2 million hits, with similar searches for alcohol (42,500) and marijuana (15,500) revealing smaller but still impressive numbers. Not surprisingly, a major challenge in using the Internet as a self-help tool is sorting wheat from chaff in identifying accurate and helpful information [117, 131]. "Webliographies", such as the one printed in *Substance Use & Misuse* in 2002 [88], can help in this process and typically include descriptions of content and purpose of a relatively small number of Web sites that are directly relevant and informative. However, the rate at which Web sites address change gives any static catalog of links a limited life span [131].

Internet Resources for Nicotine

Currently there are hundreds of commercial and free smoking cessation Web sites available, many of which have similar content, functions, and suggestions [33]. Typical content and functions focus on: setting a quit date; finding alternative activities; recruiting social support; choosing a medication; information regarding risks and benefits; chat applications, and automated e-mails. While limited research has evaluated these kinds of self-help resources, recent randomized clinical trials have shown significant but small effects on short-term abstinence,

with quit rates ranging from 3 to 18% for up to 3 months [32, 33, 69, 118, 120].

Internet Resources for Alcohol

In comparison with self-help Web sites for smoking, fewer options are available for self-help for drinking. Nevertheless, a large number of Web sites are available that offer suggestions and tools for reducing or eliminating alcohol use. Self-help Web sites related to drinking often include: a short questionnaire followed by feedback regarding responses, including how the respondent's drinking compares with population norms for same-age, same-sex individuals; assessment of risk based on a screening measure; information about alcohol's effects on the body; tools for calculating blood alcohol content; and contact information for professional help or self-help groups [19, 35]. Controlled trials of Internet-based self-help programs have generally demonstrated efficacy, with effect sizes in the small-to-medium range (e.g., [22, 66, 101]).

Internet Resources for Other Substances

Self-help options for substances other than nicotine and alcohol over the Internet are relatively sparse. While there are undoubtedly numerous Web sites that are relevant to self-help for substances other than nicotine and alcohol, the related research literature is virtually void, with the exception of a few feasibility studies (e.g., [104]).

Conclusions

Many individuals utilize self-help strategies in their efforts to overcome substance dependence and addiction. Existing research literature suggests that self-change (i.e., natural recovery) is in fact the most common route through which substance use changes occur. Self-help strategies seem to be less effective for individuals with more severe dependence. From a public health perspective, self-help strategies represent ideal mechanisms for reducing substance use-related problems because they are almost invariably low cost relative to formal treatment, and because they can be disseminated widely (e.g., bibliotherapy, helplines, and Internet). Moreover, the existing literature on self-help strategies is relatively promising, suggesting that in addition to being lower cost and widely available, self-help is also relatively effective.

The quantity and quality of the literature provide an important caveat for the rosy prospectus on self-help approaches. In comparison with the treatment literature, the literature on specific self-help strategies is considerably smaller and with fewer controlled studies. To some extent, this may be due to the inherent nature of self-help, the typical focus of health professionals on more formal treatment approaches, and perspectives on addiction that are incompatible with self-help as a viable option. By their nature, self-help strategies are less likely to draw attention from health care professionals or researchers in addiction. Thus, the prevalence of self-help strategies has remained under the radar until recently. While there is reasonably strong literature related to certain self-help approaches for some behaviors (e.g., replacement, bibliotherapy, and helplines) and substances (tobacco and alcohol), the literature related to other strategies (e.g., Internet resources and meditation) and other substances (e.g., steroids, cocaine, and heroin) is sparse. In some cases, this presents a quality control issue given the wide availability of Internet sites or self-help books with limited or no evidence that the specific suggestions proposed will be of benefit to the individual seeking change.

A number of deeper and broader issues underlie the consideration of self-help for addictions. To the extent that addiction is defined by one's inability to control use, self-help is somewhat of an oxymoron (i.e., if a person can stop, were they really addicted?). On the other hand, even formal treatment approaches require that

individuals help themselves—whether practicing thought exercises or driving themselves to an appointment with a therapist. Regardless of how either self-help or addiction is defined, it seems clear that a desire to change is fundamental in determining the success of change efforts. For many, experiencing negative consequences related to substance use is enough to initiate a self-correction process, although the form of that process may vary by individual and by substance. This chapter represents an attempt to provide a broad overview of self-help approaches for addiction, with specific examples for specific substances. Based on the available evidence, self-help strategies appear to work well for many, especially those on the less severe end of the continuum, but more nuanced questions, such as which ones work for whom under what conditions and for what substances, are in need of critical and systematic investigation.

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