

CHAPTER 1

Assessment of Addictive Behaviors for Relapse Prevention

DENNIS M. DONOVAN

Over a decade and a half ago the introductory chapter for the first edition of this book dealt with the then “emergent” biopsychosocial model of addictive behaviors and its implications for their assessment (Donovan, 1988; Donovan & Marlatt, 1988). While this model had its early proponents (Ewing, 1977, 1980; Galizio & Maisto, 1985; Pattison, 1980; Spittle, 1982; Wallace, 1989, 1993; Zucker & Gomberg, 1986), it had not yet assumed a prominent role in conceptualizations of addictive behaviors or their treatment. The theoretical and clinical addictions landscape was filled with a number of single-factor models that promoted a particular theoretical orientation or clinical approach, often with little or no collaboration or interaction across disciplines or across proponents of differing models (Donovan & Marlatt, 1993; Siegler, Osmond, & Newell, 1968). However, it was becoming increasingly clear that no single approach was sufficient in and of itself to explain or ameliorate addictive behaviors, and that integrative models held the greatest likelihood of more effectively preventing relapse (Llorente, Fernandez, & Gutierrez, 2000). As Wallace (1993) noted, neither a naive disease model nor a naive behavioral concept (the most prominent models of the time) can explain addictive behaviors fully. Rather, multidimensional, interactive, biopsychosocial models are necessary for continued progress in understanding and altering these disorders. As Moos (2003), reflecting on advances made in the field of addictions over the past 30 years, recently stated:

We have formulated conceptual models, measured key constructs, examined salient theoretical issues, and made substantial progress in understanding the ebb and flow of addictive disorders. An integrated biopsychosocial orientation and a theoretical paradigm of evaluation research have supplanted earlier adherence to

an oversimplified biomedical model and reliance on a restrictive methodological approach to treatment evaluation. And yet, in an ironic way, more remains to be done than before, in part because of our increased knowledge and in part because of new clinical perspectives and treatment procedures and the evolving social context in which we ply our trade. (p. 3)

This represents the current context in which the assessment of addictive behaviors must be viewed and understood.

Consistent with Moos's perspective, Shaffer (1997) has also suggested that addictions is yet an emerging scientific field in its relative developmental infancy and is in need of further conceptual clarity. Explanatory models are developed in order to provide a theoretical framework within which to explain the etiology, natural history, and consequences of a disorder (Meyer & Babor, 1989). The biopsychosocial model, an integrative model, which posits that addictive behaviors are complex disorders multiply determined through biological, cognitive, psychological, and sociocultural processes, can provide such needed clarity to the field.

There has been considerable progress since the first edition of this book appeared (Donovan & Marlatt, 1988). The biopsychosocial model is no longer "emergent"; rather, it has emerged. There is evidence of its application in research and practice in smoking behavior, alcohol and drug dependence, eating disorders, gambling, and sexual addictions. There is a better understanding of the biological, psychological, and sociocultural contributors to the addiction process. There has been continued development of an interdisciplinary approach to such addictive behaviors, with the realization that addictions are multiply determined and require a range of expertise to address them. This latter point is exemplified by the recent trend within the National Institutes of Health (NIH) promoting "transinstitute" research; that is, researchers who previously had traditionally worked within the "boundaries" of one of NIH's institutes that best reflected their expertise have crossed over these institute boundaries to work collaboratively on a common problem. An example of this was a recently convened NIH Special Emphasis Review Group that I chaired in response to a transinstitute request for applications (RFA), entitled "Maintenance of Long-Term Behavior Change." It was particularly gratifying to see researchers, both applicants and reviewers, from different academic disciplines, and with particular "institute identities," realize that they shared common behavioral principles and approaches to prevent relapse across a wide variety of apparently disparate behaviors such as maintaining a "five-a-day" fruit-vegetable diet; using sunscreen; continuing a regular exercise regimen; stopping tobacco, alcohol, and illicit drug use; and refraining from sexual behaviors having a high risk for HIV infection. Clearly, the reviewers came away with a new appreciation of what researchers from other disciplines have to offer in dealing with addictive behaviors and behavioral health issues.

Despite the many advances that have been made in the area of addictive behaviors over the past decade and a half, there is considerable room for con-

tinued improvement. This point was underscored recently by a report from the Centers for Disease Control and Prevention (CDC) that focused on “actual causes” of death in the United States (Mokdad, Marks, Stroup, & Gerberding, 2004). This term refers to major external (nongenetic) factors that contribute to death. The focus was on those categories of causes of death that are preventable. In most cases these actual causes reflect modifiable risk factors related to lifestyle patterns and their associated behaviors. Five of the nine most common actual causes of death in 2000 were addictive behaviors that are covered in this book and in the second edition of *Relapse Prevention* (Marlatt & Donovan, 2005). The top three most common actual causes of death were the result of tobacco use (435,000, 18.1% of total U.S. deaths), poor diet and physical inactivity (400,000 deaths, 16.6%), and alcohol consumption (85,000 deaths, 3.5%). Also among the top nine causes of death were risky sexual behaviors (20,000 deaths) and use of illicit drugs (17,000 deaths). Furthermore, it was projected that if the current rates continue, actual deaths attributable to poor diet and physical inactivity will surpass those attributable to smoking.

The public health implications of such findings are clear (Mokdad et al., 2004; Tucker, Donovan, & Marlatt, 1999): There is a continued need for prevention efforts targeting these behaviors and lifestyles. The rates of such behaviors have remained relatively high despite efforts at prevention, and most have high rates of relapse. Given this, it is important to develop efficacious treatments that can help individuals change these addictive behaviors and lifestyles, and assist them in maintaining long-term behavior change and preventing relapse.

The purpose of this chapter is to provide updated information on the biopsychosocial model of addictive behaviors and its component factors as they relate to relapse and interventions aimed at preventing relapse. This is done within the context of this model’s application to the assessment process that serves as a prelude to and guide for clinical interventions. It also provides an overview of assessment issues in the context of relapse prevention (see Marlatt & Donovan, 2005). More detailed information on specific approaches to and instruments to use in the assessment process can be found elsewhere (e.g., Carroll & Rounsaville, 2002; Donovan, 1998, 2003a, 2003c; Rotgers, 2002), as well as in the remaining chapters of this book.

WORKING DEFINITION OF ADDICTIVE BEHAVIORS

An important first step in dealing with relapse is to have a common concept of what constitutes an “addictive behavior.” In this volume and in the second edition of *Relapse Prevention* (Marlatt & Donovan, 2005), this term is applied to a wide range of behaviors, including what are often traditionally thought of as addictions: dependence on alcohol, opiates, cocaine, and other stimulants, such as methamphetamines, marijuana, club drugs, and tobacco.

In addition to other shared features such as the potential for the development of tolerance and dependence, and potential underlying genetic and neurochemical underpinnings, these behaviors have often been viewed as similar because they involve ingestion of some type of substance. Consistent with this, they have been grouped together as substance use disorders in diagnostic systems such as the fourth edition of the *Diagnostic and Statistical Manual for Mental Disorders* (DSM-IV; American Psychiatric Association, 1994). In the developing revisions of the DSM system, these behaviors are categorized as forms of chemical abuse or dependence (DSM-IV-TR; American Psychiatric Association, 2000). However, we have also included non-chemical-related behaviors, including gambling, eating disorders, and sexual behavior, in our working conceptualization of addictive behaviors.

The inclusion of these “nontraditional” addictions, which were not included in the original edition of this book, is consistent with broadened working definitions of addictive behaviors provided by Goodman (1990) and Smith and Seymour (2004), and their similarities with chemical dependencies (Lesieur & Blume, 1993; Schneider & Irons, 2001). Both of these definitions appear to apply comparably to substance-related and non-substance-related addictive behaviors. Goodman (1990) has proposed that addiction is a process whereby a behavior that can function both to produce pleasure and to provide escape from internal discomfort is employed in a pattern characterized by (1) recurrent failure to control the behavior and (2) continuation of the behavior despite significant negative consequences. To this definition Smith and Seymour (2004) add a third element: compulsive use or engagement in the behavior. They further suggest that all addictive behaviors attempt to meet one or more of three motives: (1) psychic rewards, or achieving a desired change in moods; (2) recreational rewards, or increasing sociability and having fun with others in mutually enjoyable activities; and (3) instrumental achievement rewards, or attempts to enhance performance with accompanying increases in a sense of success, mastery, and well-being. These broader definitions of addictive behaviors are similar to that previously used by Donovan and are consistent with the view inherent in a biopsychosocial conceptualization of addictive behaviors (Donovan, 1988).

While there are a number of common features across addictive behaviors (e.g., rates, timing, and precipitants of relapse) (Bradley, 1990; Goodman, 1990; Hayletta, Stephenson, & Lefevera, 2004; Marks, 1990; Patkar et al., 2004), each also has features that are unique to the particular substance or problem area. In order to prevent or to treat such disorders successfully, it is necessary to incorporate these multiple factors into a unified approach. If progress is to be made, it will be necessary to begin bridging the gap across addictions and disciplines, with an effort to work collaboratively and interactively toward a common goal, namely, the prevention and treatment of addictive behaviors. It is of note that nearly 35 years ago, Hunt, Barnett, and Branch (1971), in first bringing attention to the similar time-course and rates of relapse across alcohol, opiates, and tobacco, indicated then that those who

work in the different areas of addiction might benefit from more interaction. This recommendation has contributed to the cross-addictions and interdisciplinary work that has been generated by the biopsychosocial model and relapse prevention. Furthermore, it will be necessary to bridge the gap between researchers and clinicians to develop and implement effective treatments in community-based clinical practice (Lamb, Greenlick, & McCarty, 1998).

RELAPSE PREVENTION: AN OVERVIEW

Before discussing assessment issues related to relapse in addictive behaviors, it is important to have a working knowledge of relapse prevention, its theoretical underpinnings, and its clinical application. This information is a prerequisite for identifying relevant assessment domains. An important component of rehabilitation and treatment planning with individuals attempting to change an addictive behavior is relapse prevention. Staying clean and sober or refraining from engaging in a particular behavior is one of the biggest challenges that individuals face after completing a treatment program or self-change. Although addictive behaviors represent a complex of genetic, physiological, sociocultural, and psychological components, and there are a number of models of the relapse process that give differing weights to biomedical and cognitive-behavioral constructs (Connors, Maisto, & Donovan, 1996; Donovan & Chaney, 1985), relapse prevention can be conceptualized as essentially a problem-solving process and a reorientation of life attitudes and values (Giannetti, 1993). Marlatt and colleagues (Larimer, Palmer, & Marlatt, 1999; Marlatt & Donovan, 1981; Marlatt & George, 1984; Marlatt & Gordon, 1980, 1985) have presented a model of relapse that has stimulated both clinical research and application.

“Relapse prevention” is a generic term that refers to a wide range of cognitive and behavioral strategies designed to prevent relapse in the area of addictive behaviors and that focus on the crucial issues of helping people who are changing their behavior to maintain the gains they have made during the course of treatment or self-change. The goals of relapse prevention strategies are twofold: (1) to prevent an initial lapse back to drinking, drug use, or other addictive behavior and (2) to prevent an initial lapse, if it does occur, from becoming more serious and prolonged by minimizing the physical, psychological, and social consequences of the return to use.

While the relative emphasis will vary depending on the program, a number of common elements are involved in relapse prevention. First, it is important to educate the individual about the relapse process. Despite having relapsed previously, many individuals are not familiar with the range of factors that trigger their actions; they feel that their relapses just come “out of the blue” in a very unpredictable way. A goal is to educate them about a number of predictable events that lead to relapse and the feelings that come after a relapse.

A second important part of the prevention process is to help the patient identify high-risk situations—thoughts, feelings, people, places, and social activities that have been repeatedly associated with past alcohol and drug use. Over time, through their repeated pairing with drinking, drug use, or a particular addictive behavior, these situations may come to serve as classically conditioned stimuli. Exposure to these internal cues (e.g., thoughts, feelings, physical states) or external stimuli (e.g., people, places, activities) may threaten one's abstinence or moderation goals, an increased experience of craving and selectively thinking about the "good old days," when one was able to use or drink without negative consequences. The most common situations related to relapse, across both individuals and addictive behaviors, include (1) peer or social pressure to use, either directly or more subtly by returning to the "old haunts" where they used to drink or use and are in ongoing social contact with their former using friends or drinking buddies; (2) a desire for social inclusion and the experience of positive interpersonal benefits of the behavior; (3) negative emotional states that include depression, loneliness, boredom, and lack of time structure; and (4) anger and resentment that typically result from some form of interpersonal conflict.

Not all individuals attempting to change an addictive behavior are subject to relapse, and all who do relapse do not have the same precipitants; that is, not all people will experience the same situations as equally risky. Thus, a crucial step in the treatment process is to help the individual identify personal "warning signs." These may include cognitive warning signs, such as "euphoric recall" (e.g., thoughts about the positive aspects of past use), justifications for relapse (e.g., "I owe myself a drink" or "One won't hurt"), dreams about drugs that lead to craving upon awakening, and rationalizations for discontinuing recovery activities. A second area includes emotional warning signs, such as positive emotional states (e.g., excitement, arousal, celebration), as well as negative affective states (e.g., depression, loneliness, anger, boredom). A third area represents behavioral warning signs, such as compulsive or impulsive behaviors previously related to drinking, drug use, or another addictive behavior, spending time with drug users or drinkers, and returning to secondary drug use (e.g., "Cocaine is my problem, so it's OK if I drink or smoke dope"). The occurrence of any of these warning signs may increase the risk of relapse. One way to identify these personal warning signs is to review past relapses, since specific relapse patterns often repeat themselves.

Once these areas of high risk for relapse have been identified, attention is turned to helping individuals develop practical ways to deal with such situations. This involves developing and practicing behavioral and cognitive coping strategies. While a goal may be to help the individual develop general coping skills, the more immediate goal is to help him or her learn skills that are related directly to avoiding or reducing alcohol-, drug-, or specific addictive behavior-related risks. These include ways to deal with craving and urges to drink, use, or engage in an addictive behavior; to manage thoughts about the addictive behavior; to develop problem-solving skills that can be applied to a

range of potentially risky situations; to refuse offers to drink, use drugs, or engage in the behavior; to develop an emergency plan to minimize the chance of relapse if confronted by a risky situation; to anticipate and plan how to handle a slip if it does occur; to reframe relapse as not being the “end of the world” if it does occur; and to learn that a number of emotions (e.g., anger, disappointment, depression, embarrassment) are likely to occur following a relapse, that these are predictable, and that the individual can cope with them.

Early on in the skills training process, the focus should probably be concrete; as the person develops greater skill and confidence, a shift might be made from more behaviorally oriented approaches toward more cognitive ones. An important clinical consideration in the skills training process is to provide ample opportunity for the individual to learn these new skills, not just be exposed to them; that is, enough practice and behavioral rehearsal should be provided, through modeling, role playing, feedback, and homework, to ensure that patients have acquired the new skill and can actually apply it. The goal of such interventions is not only to give individuals specific skills to increase their coping abilities and be able to use alternative behaviors or thoughts that can help them either avoid or confront risky situations, but also to provide an increased sense of confidence, self-efficacy, and personal control.

There has been an increased focus on the use of empirically supported interventions in the addictions (McCrary, 2000). Relapse prevention and coping skills training, its major intervention approach, have demonstrated efficacy with a number of addictive behaviors (Carroll, 1996; Donovan, 2003b; Dowden, Antonowicz, & Andrews, 2003; Irvin, Bowers, Dunn, & Wang, 1999; Miller & Wilbourne, 2002; Monti, Gulliver, & Myers, 1994; Witkiewitz & Marlatt, 2004). Relapse prevention approaches are highly flexible and can be adapted to a range of treatment settings and a variety of addictive behaviors. They can be incorporated into inpatient, outpatient, or after-care programs; delivered in individual, group therapy (Graham, Annis, Brett, & Venesoen, 1996), or couple formats (McCrary, 1993); integrated with motivational enhancement approaches (Baer, Kivlahan, & Donovan, 1999; Rohsenow et al., 2004); and combined with medications (Annis, 1991; Feeney, Young, Connor, Tucker, & McPherson, 2002; O'Malley et al., 1992; Schmitz, Stotts, Rhoades, & Grabowski, 2001). An advantage of relapse prevention is that it can be incorporated into programs with a variety of different clinical and philosophical approaches, including those with moderation goals (Larimer & Marlatt, 1990). It also should be incorporated into a broader context of change in the person toward a more balanced overall lifestyle. Individuals are also encouraged to develop peer and support groups that share the goal of a clean and sober lifestyle. Together, the increased support for being clean and sober and the availability of specific coping skills to deal with high-risk situations as they arise will reduce the chances of relapse.

From the standpoint of assessment, the task is to identify the potential precipitants of relapse and the individual's unique high-risk situations, and to

determine the deficits and strengths in coping skills, the degree of self-efficacy, and the expectancies the person has about the anticipated outcomes from engaging in the addictive behaviors.

ASSESSMENT ISSUES IN THE CONTEXT OF RELAPSE PREVENTION

The model of relapse developed by Marlatt and colleagues (Cummings, Gordon, & Marlatt, 1980; Larimer et al., 1999; Marlatt & Gordon, 1985) has provided an important heuristic framework within which to describe, understand, and, potentially, predict and prevent relapse. It has also stimulated a great deal of clinical research and the integration of relapse prevention into clinical programs for the treatment of addictive behaviors. An important component in this model is the assessment of those characteristics of the individual and of the situational context that would allow the prediction and classification of a relapse episode after a period of abstinence. This section provides a brief overview of issues involved in the process of assessment related to the classification and prediction of relapse (Donovan, 1996a).

Operational Definitions of “Lapse” and “Relapse”

Addictive behaviors are often described as chronic relapsing disorders. They are also characterized by high rates of relapse. In reviewing the relapse process and relapse prevention approaches, Einstein (1994) listed a number of critical issues that were as yet unresolved, the most prominent of which was the way “relapse” is defined: “At what point is a return to a defined pattern of single/multiple substance use RELAPSE as well as what are the coping/adaptational and treatment implications of the definition(s)?” (p. 409). At first glance, it would seem that defining relapse would be straightforward: The person has either resumed or not resumed drinking or drug use, or is once again engaging in the addictive behavior following a period of abstinence or acceptable behavior. However, it is not as simple as it appears. Clearly, the term “relapse” connotes or denotes meaning that extends well beyond a simple dichotomous outcome. As the subtitle of an article by Miller (1996) suggests, there are at least “fifty ways to leave the wagon.”

The complexity of this issue is demonstrated by the multiple meanings connoted by the term “relapse” in the literature. Litman, Stapleton, Oppenheim, Peleg, and Jackson (1983), Miller (1996), Saunders and Allsop (1987, 1989), Chiauzzi (1991), Wilson (1992), and others have presented a number of differing definitions. Miller (1996) suggests at least three possible meanings. These include the descriptive presence or absence of the behavior, the behavior exceeding a certain threshold, and a judgment about the behavior relative to standards of what is acceptable either to the individual or to society more broadly. Other definitions have included the following: (1) a pro-

cess that gradually and insidiously leads to the initiation of substance use or engagement in the behavior after a period of abstinence (e.g., “apparently irrelevant decisions”); (2) a discrete event that is defined by the return to an initial use of the substance (e.g., a “lapse”); (3) a return to the same intensity of substance use (e.g., a “relapse”; Marlatt has made a conceptual distinction between a “lapse,” which involves the initial use of a substance after a period of abstinence, and a “relapse,” which involves continued use after this initial slip); (4) daily use for a specific number of sequential days (e.g., “hazardous drinking”); and (5) a consequence of substance use resulting in the need for subsequent treatment (e.g., “recidivism”) (Donovan, 1996a). There have also been a number of multidimensional composite indices of outcome/relapse that take into account both return to limited versus more extensive engagement in the addictive behavior and the presence versus absence of related problems (e.g., Zweben & Cisler, 2003). Such multidimensional measures, which go beyond the binary classification of abstinence–relapse, are well suited for evaluating program outcomes in general and, more specifically, harm reduction programs that have nonabstinence goals (Marlatt & Witkiewitz, 2002).

Clearly, the definition arrived at in response to the question “What is relapse?” has a number of possible implications. Two implications, for instance, include (1) different estimates of the rates of relapse based on different definitions, and (2) different conceptual and methodological approaches involved in assessment and prediction models depending on the definition of relapse. Maisto, Pollock, Cornelius, Lynch, and Martin (2003) investigated the impact of differing definitions among adolescents following treatment. They used four definitions of relapse: (1) at least 1 day of drinking any amount after at least 4 consecutive days of abstinence; (2) at least 1 heavy (five standard drinks for boys, four for girls) drinking day after 4 abstinent days; (3) at least 1 day of drinking any amount, with associated problems, after 4 abstinent days; and (4) at least 1 heavy drinking day, with associated problems, following 4 abstinent days. They found that both the rates of relapse and the “time to relapse” varied greatly depending on the definition used. The relapse rates ranged from 50.0% to 73.9% of the sample, and the time to relapse ranged from 26 to 90 days. The different definitions of relapse during the 6-month posttreatment period also predicted different aspects of outcome during the 7- to 12-month period. The presence of any drinking (definitions 1 and 3) during the first 6 months posttreatment was predictive of having a current substance use disorder diagnosis during the subsequent 6 months. On the other hand, the definitions involving heavy drinking (2 and 4) were predictive of the average number of drinking occasions per month and drinks per drinking day.

The findings relative to differing lengths of time to relapse raise an important point both conceptually and methodologically. In the first edition of this book, Curry, Marlatt, Peterson, and Lutton (1988) described the application of survival analysis to the study of relapse. This procedure determines the length of time to a relapse, however defined, and the percent of a sample that

are survivors at a given point in time. If one meets the criterion for relapse, one is no longer considered a survivor. A limitation in this approach is that it does not map onto the naturalistic course of addictive behaviors and the relapse process. Individuals move into and out of periods of use and abstinence, often evidencing a gradual change in use or behavior before the emergence of a more stable use or abstinence pattern. However, survival analysis is based on the use of a dichotomous outcome (relapsed or not). More recent approaches allow one to look at the occurrence of multiple events, such as the time to first use, the time to and length of the subsequent period of abstinence, and the time to a subsequent return to use (Wang, Winchell, McCormick, Nevius, & O'Neill, 2002). It is also possible to look at the predictors of each of these events. Multiple event analyses can accommodate any definition of relapse.

The definition of relapse also has an impact on the conceptual and clinical approach to assessment. If relapse is viewed as a discrete event, then a static assessment model can be used; that is, information collected at some baseline point, incorporating information concerning prior relapse events and other drinking, social, psychological, and demographic information, can be used and should be sufficient for the prediction of relapse in the future. This approach has been used fairly frequently in treatment outcome studies in which an attempt is made to predict posttreatment status from intake information (Miller, Westerberg, Harris, & Tonigan, 1996). Alternatively, while still viewing relapse as a discrete event and employing a static assessment model, it might be argued that focusing on the immediate precipitants of that event to "capture the moment" of a relapse would be more appropriate than historical information collected at baseline. This has been the focus of studies that attempt to determine the precipitants that may be predictive of a lapse or relapse versus a high-risk situation that is handled well (Moser & Annis, 1996). As might be expected, Miller et al. (1996) found that more proximal variables accounted for a substantially greater amount of variance in subsequent outcome than the more distal intake variables. Also, not surprisingly, the availability and use of adequate coping skills and higher levels of self-efficacy have been associated with preventing a crisis situation from turning into a relapse (Miller et al., 1996; Moser & Annis, 1996; Noone, Dua, & Markham, 1999; Vielva & Iraurgi, 2001).

Marlatt and Gordon (1985) and others (Litman, 1986) have described relapse not as a discrete event, but rather as the return to drinking, substance use, or other addictive behaviors at the end point of a process or the culmination of a series of related events. Within this framework, assessment models need to be dynamic, not static, in order to assess temporal variations in and among important elements of the process (Donovan, 1996a; Hufford, Witkiewitz, Shields, Kodya, & Caruso, 2003; Shiffman et al., 2000; Witkiewitz & Marlatt, 2004). Assessments must be taken periodically with some degree of regularity across time to capture the process as it unfolds. Consistent with this, Shiffman and colleagues (2000) found that while base-

line levels of self-efficacy predicted an initial return to smoking, day-to-day fluctuations in strength of self-efficacy predicted the transition of an initial lapse into relapse.

A number of recent developments in the use of telephone-based, interactive voice response technology (Mundt, Bohn, King, & Hartley, 2002) has allowed the assessment of variables more proximal to the occurrence of a relapse, while ecological momentary assessments based on the use of palm-sized computers allow nearly real-time assessment of potential relapse precipitants in high-risk situations (Collins et al., 1998; O'Connell et al., 1998). Ecological momentary assessment procedures have been used to determine the precipitants of and reaction to relapse crises and actual lapses in smoking, drinking, and dieting (Carels, Douglass, Cacciapaglia, & O'Brien, 2004; Collins et al., 1998; Stone et al., 1998). Clearly, being able to assess adequately and accurately the relative strength of such variables and their dynamic interactions across time is quite challenging; however, it may be necessary in order to gain a clearer picture of the relapse process as it plays out across time and in the moment of crisis (Hufford et al., 2003; Witkiewitz & Marlatt, 2004).

Prospective versus Retrospective Assessment of Relapse Precipitants

An issue related to and confounded with the timing of assessments in the relapse process is the degree to which prospective versus retrospective approaches are used to identify relapse precipitants. The use of ecological momentary assessment techniques provides an opportunity for prospective assessment, in that ratings of possible precipitants are measured in near real time sometime prior to exposure to a high-risk situation. Similarly, such momentary assessments also can provide an opportunity to examine moods and cognitions shortly after a relapse, allowing an investigation of the abstinence violation effect (AVE; Shiffman, Hickcox, et al., 1996).

While providing a better perspective on the relationship between precipitants and relapse, ecological momentary assessments are beyond the scope of many, if not most, clinical programs.

As a result, most research in this area has been retrospective (McKay, 1999). Typically, individuals are asked at some point following treatment completion to provide a retrospective assessment of the events and emotions that occurred prior to a lapse episode during the follow-up period. There are a number of concerns about relying on such retrospective self-reports of relapse episodes, their precipitants, and their aftereffects (McKay, Rutherford, & Alterman, 1996). The first is a possible lack of awareness or insight into the reasons for a relapse episode. Furthermore, the acute effects of alcohol and drugs, as well as the "rush" that accompanies the recurrence of other addictive behaviors, may lead to reduced information processing, narrowed perception of most immediate internal and external stimuli, and distorted recollection of events. Shiffman and colleagues (1997) evaluated the correspondence

between information about the same smoking lapse collected by ecological momentary assessment and retrospective recall. They focused on the recall of mood, activity, triggers or precipitants, and the AVE associated with the lapse. The momentary assessment of the relapse was recorded in an average of less than 10 minutes following its occurrence; the retrospective recall occurred approximately 3 months after the episode. Few individuals (23%) provided the correct date of the lapse, with recalled estimates about 14 days off the date. Similarly, there was a high rate of discrepancy between the momentary assessment and retrospective recall concerning the factors associated with the lapse. The average correlations between the two approaches in the measurement of the domains of mood, activities, triggers/precipitants, and AVE were .36, .24, .28, and .34, respectively. The lack of correspondence was also found on specific elements thought to be theoretical components of the relapse process: only 45% agreement on coping, and 32% agreement in the recall of the single most important trigger. Recalled mood showed only modest correspondence with real-time data. Although the focus of the study was on smoking lapse, alcohol consumption was the most accurately recalled variable, with 83% of participants correctly recalling drinking. These discrepancies occurred despite the fact that the participants reported having relatively high confidence in their ability to recall their prior lapse episode.

Of note, Shiffman et al. (1997) found that neither the degree of confidence in their participants' recall nor the length of the recall interval was related to accuracy. This is in contrast to findings by McKay et al. (1996) with cocaine abusers. These investigators found that reports of the experience of unpleasant affect, positive experiences, interpersonal problems, and self-help group involvement prior to relapse did not appear to be influenced to a significant degree by the amount of time that elapsed between the relapse and interview. As such, McKay et al. suggest that there is little need for concern about time effects when reports of experiences in these areas are used in clinical work, such as in relapse prevention. On the other hand, clinicians and researchers should take into consideration that the cocaine abusers tended to report more social pressure to use drugs and sensation seeking prior to relapse when a longer period of time elapsed between the relapse and interview.

Potential Attributional Biases in Retrospective Assessment

There are a number of other potential difficulties and attributional biases inherent in retrospective assessment (McKay, O'Farrell, Maisto, Connors, & Funder, 1989; Walton, Castro, & Barrington, 1994). Each of these factors may contribute independently or interactively to an inaccurate identification of "true" relapse precipitants (e.g., "false positives"). These factors include (1) a tendency to attribute failure to external factors and success to internal factors; (2) a tendency to "catastrophize" or "cry in one's beer" when intoxicated, which may lead to a distorted attribution of events to internal states

and negative emotions; (3) coloring by the emotional overlay of depression, guilt, and other emotional reactions hypothesized to accompany the AVE associated with relapse; and (4) based on the original conceptualization of the AVE, a tendency to blame oneself (personal attribution) as the cause of relapse. Based on these possibilities, different mechanisms operative in retrospective assessments may contribute to incorrectly attributing relapse precipitants to either external or internal factors, depending upon the circumstances and the context in which the person finds him- or herself.

The influence of such factors was noted in the study of momentary versus retrospective assessment of precipitants to smoking lapses by Shiffman and colleagues (1997) described earlier. They reasoned that since one's experiences after an event can color recall concerning it, participants' smoking status at the time of the follow-up interview might bias their recall of their relapses. Furthermore, they assumed that AVE variables might be particularly vulnerable to recall bias given that smoking experience after an initial lapse is hypothesized to affect attributions for the lapse episode. For AVE assessment, participants were asked to characterize their reactions to the lapse, reporting whether they felt encouraged, their confidence to continue abstaining, whether they felt guilty, whether the episode was their fault, and whether they felt like giving up their efforts to abstain. They also rated their attributions for the cause of the episode on three dimensions: internality (outside me–inside me), controllability (controllable–uncontrollable), and stability (changing–unchanging). They examined the relationship between recall bias (i.e., retrospective recall vs. momentarily recorded AVE values) and smoking status at recall. In their retrospective recall, participants overestimated their negative affect and the number of cigarettes they had smoked during the lapse. Furthermore, their recall was influenced by current smoking status. As hypothesized, participants who had more smoking days exaggerated in retrospect how much the lapse had made them feel like giving up their quit effort; however, it was not related to bias of recall for any other individual AVE items. The findings suggest caution in the use of recall in research and intervention.

Single versus Multiple versus Interactive Precipitants

Another issue is whether one is attempting to determine the influence of a single precipitant or a set of multiple and interactive precipitants as factors in relapse. As originally developed, Marlatt's relapse taxonomy system (1996b) only allowed one precipitant to be identified for a lapse, namely, that which was most proximal in time to the lapse could be identified as *the* precipitant for the episode. Marlatt's broader model of the relapse process (Marlatt & Gordon, 1985), however, suggests that the relative risk of relapse is a function of the individual's immediate and recent emotional state; the social and interpersonal context of the situations to which the person is exposed; the availability and effectiveness of, and access to emotional and/or cognitive coping

strategies; and the individual's sense of personal efficacy or confidence not to drink, use drugs, or engage in an addictive behavior in those situations appraised as high risk.

The more limited taxonomic approach is consistent with a reductionistic tendency to look at a relapse episode in an attempt to "capture the moment," by focusing on what happened immediately prior to the event. This is consistent with the perspective of the ecological assessment process. However, focusing only on factors immediately prior to a relapse is likely to be insufficient. It may lead to a false assumption that those variables (or in Marlatt's original taxonomy, the one variable) immediately preceding a relapse, because of their temporal proximity and relative influence, are the "real reasons," without looking beyond the immediate time frame at other potential contributing factors suggested in the model of the relapse process. Conversely, it further may lead to the erroneous conclusion that other variables more distant in time exert little or no influence on the occurrence of a relapse (e.g., "false negatives"). The need to take contextual factors into account is consistent with the use of retrospective assessment and the use of a functional behavioral analysis to identify both precipitants and consequences of the relapse.

Shiffman (1989) has suggested that multiple layers of assessment may be needed to predict relapse, and that one cannot focus only on a single level exclusive of the others. This suggests the use of a multivariate, multidimensional assessment process that takes into account a variety of stages and levels of variables (Donovan, 1988). An expanded model of Marlatt's relapse precipitant taxonomy has been recommended (Donovan, 1996b; Stout, Longabaugh, & Rubin, 1996). It would allow the inclusion of multiple variables exerting differential levels of influence across a range of time varying in proximity to the relapse event. A number of these recommendations have been incorporated recently into a reconceptualized cognitive-behavioral model of relapse that focuses on the dynamic interactions between multiple risk factors and situational determinants (Witkiewitz & Marlatt, 2004). When such an expanded model of assessment is used, it appears that multiple reasons, in combination and interaction, not just one, are rated by subjects as being important in the relapse process (Heather & Stallard, 1989; Miller et al., 1996; Zywiak, Connors, Maisto, & Westerberg, 1996).

Static versus Continuous Assessment

The previous discussion addresses in part another issue, namely, the appropriateness of a static versus continuous model of assessment. Given the multiple and interactive nature of these risk factors and situational determinants, and their likely fluctuation across both more distal and proximal time frames prior to a relapse, the ability to predict accurately a given relapse category without relatively continuous assessment is exceedingly difficult (Donovan, 1996a, 1996b; Marlatt, 1996a). This latter point was noted by Hodgins, el-Guebaly, and Armstrong (1995). In a prospective assessment condition, subjects were

called weekly to provide mood ratings. For subjects in this condition who subsequently relapsed, the average length of time from the most recent assessment prior to the relapse episode was 2.4 days. Hodgins et al. noted that even this relatively short time frame may be too distant to capture adequately the rapidly fluctuating moods associated with relapse. Also, in the absence of both more proximal measures of the situation and other elements of the relapse model (coping skills, self-efficacy, etc.), it may be inappropriate to attempt to rely only on prior relapse episodes to predict subsequent relapses.

Clearly, it appears that a single baseline assessment at, for instance, the beginning or end of a treatment experience is likely to be insufficient to predict subsequent relapse. Rather, inherent in both Marlatt's definition of relapse as a process and in Shiffman's multivariate, multilevel model of precipitants is the need for periodic assessment across multiple domains. The assessment function will vary depending on where the individual is in the treatment/recovery process. At the point of treatment entry, the focus is on identifying individualized triggers/precipitants and high-risk situations to guide goal setting and treatment planning. During the course of treatment, the focus is on the acquisition of coping skills necessary to deal with these situations and the attendant self-efficacy that develops along with skills acquisition. Following treatment, the focus is on the degree to which the individual is confronted by high-risk situations, the degree of temptation experienced, the level of self-confidence and self-efficacy, and the frequency and nature of coping skills used. Periodic follow-up assessments may not only provide information about clients' clinical status but also may serve a therapeutic function that may help avert relapse or intervene more rapidly if a relapse has occurred (Breslin, Sobell, Sobell, Buchan, & Kwan, 1996; Stout, Rubin, Zwick, Zywiak, & Bellino, 1999).

Broad versus Specific Dimensions of Assessment

A final issue is the degree of specificity needed in the assessment process; that is, is it necessary to identify the individual's relapse precipitants with the degree of specificity found in Marlatt's original taxonomy versus surveying the broader context in which relapses occur? Marlatt's relapse taxonomy focuses on both broad dimensions of precipitants (e.g., interpersonal, intrapersonal) and much more specific precipitants within each of these dimensions (e.g., coping with interpersonal conflict—anger and/or frustration, coping with intrapersonal negative emotional states—anger and/or frustration). It is often assumed that the more specific the identified precipitant, the greater the utility in predicting future relapses. However, results from the Relapse Replication and Extension Project (RREP; Lowman, Allen, & Stout, 1996) suggest that the greater the specificity of the precipitants, the less reliable their classification (Longabaugh, Rubin, Stout, Zywiak, & Lowman, 1996).

A number of measures of relapse precipitants based on Marlatt's taxonomy, such as the Inventory of Drinking Situations (IDS; Annis, Graham, &

Davis, 1987), have been developed across a number of addictive behaviors. Factor-analytic studies utilizing such self-report questionnaires, which involve relatively specific items reflecting relapse precipitants, have typically found a smaller number of broad categories of precipitants that accounted for the majority of the variance. For example, Litman et al. (1983) derived three factors from the Relapse Precipitants Inventory (RPI): unpleasant mood states (e.g., depression, anxiety, social anxiety), external events and euphoric states, and lessened cognitive vigilance. Similarly, both Cannon, Leeka, Patterson, and Baker (1990) and Isenhardt (1991, 1993) found three primary factors for the IDS (Annis et al., 1987): negative affective states, positive affective states combined with social cues to drink, and attempts to test one's ability to control one's drinking.

Zywiak and colleagues have examined the dimensions of relapse precipitants using different assessment instruments in a number of samples of alcoholics. Zywiak et al. (1996) evaluated Marlatt's relapse taxonomy as assessed by the Reasons for Drinking Questionnaire (RFDQ). A factor analysis resulted in three factors, the first of which was characterized by negative emotions, including anger, depression, and anxiety. The second factor consisted of direct and indirect social pressure and positive emotions. The third factor consisted of physical withdrawal, craving, substance-related cues, and urges to drink. Each of the 13 categories in the Marlatt taxonomy loaded on one of the three factors. Zywiak et al. (2001) found a similar set of factors from the Relapse Questionnaire used in Project MATCH. Zywiak, Westerberg, Connors, and Maisto (2003), in a subsequent study in which participants were followed every 2 months for a year, examined the relationship of these three factors and subsequent relapses. They found that relapses were most likely to occur in the first 2 months, with comparable relapses occurring across the three reasons. Also, relapses due to craving and substance-related cues appeared to extinguish after the sixth month, while negative affect and social pressure relapses still occurred during months 7 through 12. If an individual had an initial relapse, there was a high risk for a subsequent relapse; however, there was no evidence that the subsequent relapse occurred within the same category of reasons as the initial episode. Negative affect relapses and craving-cued relapses were found to be more severe than social pressure relapses.

While Marlatt and colleagues (Cummings et al., 1980) have found considerable overlap across addictive behaviors, each has its own set of relatively specific relapse precipitants. As an example, Hodgins and el-Guebaly (2004) found that the two most highly endorsed reasons for relapse among pathological gamblers were optimism about winning and a need for money. Both positive and negative moods were related to gambling relapse, unlike substance abuse, in which relapses tend to be attributed to negative affect. Grilo, Shiffman, and Wing (1989) found that reasons for relapse among obese individuals with diabetes clustered into three groups: mealtime, low-arousal, and emotional upset situations. It is important to keep in mind that individuals with co-occurring psychiatric conditions may also have unique

relapse precipitants that are related to the experience or exacerbation of their psychiatric disorder (Bradizza & Stasiewicz, 2003; Weiss, Najavits, & Greenfield, 1999). This population also presents unique challenges in assessment more generally (Carey & Correia, 1998). It has been recommended that treatment for individuals with co-occurring substance use and psychiatric disorders should include both general and substance-specific coping skills training as a means of reducing posttreatment substance use and improving the psychological functioning in this population (Moggi, Ouimette, Moos, & Finney, 1999).

DOMAINS OF ASSESSMENT

Shiffman (1989) presented a heuristic model of a multivariate, multilevel approach to assess potential relapse predictors. Three levels of assessment need to be considered in order to describe adequately and predict the likelihood of relapse. They differ along a continuum of time prior to a relapse episode and exert differing levels of influence on the individual and on the likelihood of relapse. The first level includes distal personal characteristics that are relatively long-standing, enduring, stable, and unchanging. The second level involves intermediate or background variables that fluctuate over time, but do so relatively gradually, and may somehow contribute to an increased probability of relapse. The third level involves very proximal precipitants that occur at or immediately prior to the lapse; these are relatively transient and occur within the context of a high-risk situation. These levels are comparable to those incorporated into the recent expansion of Marlatt's model of the relapse process and the dynamic interplay among factors from these levels (Witkiewitz & Marlatt, 2004). A category not mentioned by Shiffman (1989) but one that is important in a model that hypothesizes the probability of movement from lapse to relapse, includes transitional variables. These occur after an initial use of a substance or recurrence of an addictive behavior and either promote continued engagement in the behavior or lead to postlapse cessation, thus mediating the transition from lapse to relapse.

This heuristic assessment model is presented in Figure 1.1 (Donovan, 1996a) as a funnel to reflect the assumption that as one moves from the more distal factors, through the intermediate and proximal factors, to the point of a possible lapse, the influence of variables at each of these levels becomes less diffuse, more focused and intense, and narrowed or funneled more within the emergent situational context of the potential relapse setting. Table 1.1 presents variables within each of the assessment domains of this model. It is not clear in some cases where a variable fits best; furthermore, it is not clear that a variable falls into only one category, since there appear to be occasions in which there may be shifting across categories and interactions among variables in different categories. This reflects the clinical reality of multiple, interactive sets of precipitants contributing to relapse.

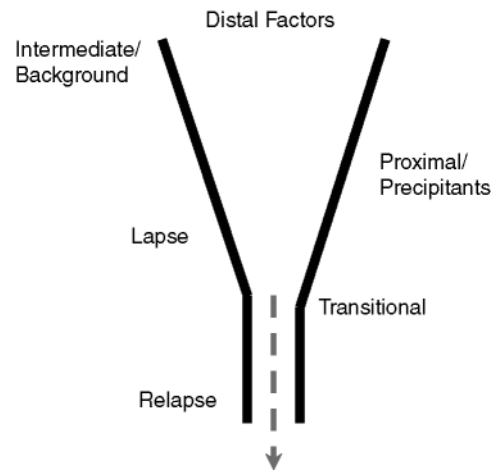


FIGURE 1.1. A heuristic framework for conceptualizing the levels of assessment involved in Shiffman's model of relapse predictors. From Donovan (1996a, p. 532). Copyright 1996 by Blackwell Publishing. Reprinted by permission.

TABLE 1.1. Assessment Domains Related to Relapse

<u>Distal personal factors</u>	<u>Proximal precipitating factors</u>
<ul style="list-style-type: none"> • Family history of alcoholism • "Type" of alcoholism • Nature/severity of concurrent psychiatric disorders • Nature/severity of concurrent substance use disorders • Presence of cognitive impairment or reduced problem-solving abilities • Severity of alcohol dependence • Conditioned reactivity to alcohol-related cues 	<ul style="list-style-type: none"> • High-risk situations • Cognitive vigilance and internal dialogue • Emotional states • Temptation-coping skills • Situational response efficacy • Conditioned cue reactivity • Salience of expected/desired substance effects • "Craving" • Commitment to abstinence
<u>Intermediate background factors</u>	<u>Transitional factors</u>
<ul style="list-style-type: none"> • Enduring life strain • Everyday life problems • Social and environmental supports • Stress coping skills/anticipatory coping skills • General sense of personal efficacy • General expectancies concerning the effects of substance • Motivation for self-improvement 	<ul style="list-style-type: none"> • Abstinence violation effect <ul style="list-style-type: none"> • Emotional states • Attributional tendencies • Restorative coping skills • Reaction of support system • Commitment to return to abstinent state

Note. From Donovan (1996a, p. 533). Copyright 1996 by Blackwell Publishing. Reprinted by permission.

Distal Personal Factors

An important element in the prediction of behavior is what the individual brings into the situation, in his or her hereditary makeup, personal background characteristics, and behavioral competencies. Such distal personal background variables may lead to patterns of behavior that expose the individual to a greater risk of alcohol, drugs, or involvement in other addictive behaviors initially, to increased problems in these areas, and to subsequent relapse. These distal background variables develop through both genetic–biological factors and social learning processes.

One distal background variable that has a demonstrated impact on the acquisition of addictive behaviors and their subsequent course is family history. For example, there appears to be differential responsivity to alcohol among individuals with or without a family history of alcoholism (Schuckit, 1994); that is, sons of alcoholic fathers, and possibly daughters (Schuckit et al., 2000), tend to demonstrate less intense responses to low-to-moderate amounts of alcohol with respect to their physiological reactivity, psychomotor function, and subjective experiences of intoxication. This reduced response to alcohol is correlated with more severe alcohol use diagnoses and is predictive of self-reported drinking practices and the subsequent development of alcohol dependence (Mundt, Perrine, & Searles, 1997; Schuckit, 1994, 1998). A low level of response to alcohol at age 20 was associated with a fourfold greater likelihood of future alcoholism in the sons of alcoholics (Schuckit, 1994). Fifty-six percent of the sons of alcoholics with the lesser alcohol response developed alcoholism during the subsequent decade, compared to 14% of the men in this group who had highly sensitive alcohol responses (Schuckit, 1994).

Consistent with the apparent familial lineage of this response, recent research has begun to identify the genetic mechanisms of this phenomenon (Schuckit et al., 2001; Wilhelmsen et al., 2003). Similar familial and, presumably, genetic influences have also been found to increase the vulnerability to the development of drug dependence (Merikangas et al., 1998), including marijuana and cocaine dependence and habitual smoking (Bierut et al., 1998), and gambling (Eisen et al., 1998). It is thought that these genetic predispositions may be manifested in alterations in neurotransmitter systems, particularly the dopaminergic and serotonergic systems, which are thought to underlie craving, sensation seeking, impulsivity, and antisocial behavior (Hill et al., 2002; Hill, Stoltenberg, Burmeister, Closser, & Zucker, 1999; Limosin, Loze, Rouillon, Ades, & Gorwood, 2003; Noble, 1998). Although there appears to be no such thing as an “alcoholic personality,” these traits and temperament variables have been among the most consistent predictors of subsequent alcoholism (Mulder, 2002).

Similarly, there appear to be different subtypes of substance abusers that have more or less genetic heritability and the manifestation of certain predisposing behavioral components. Subtypes can be characterized in terms of gen-

eral severity of problems and multidimensional risk factors for developing an addiction, or in terms of differences in temperament (Henderson & Galen, 2003). Most of the empirically derived typologies have been based on a combination of family history, age of onset of drinking or drug use and dependence, personality or temperament factors, such as impulsiveness and risk-taking, and acting-out behavior (Cloninger, 1987; Epstein, Labouvie, McCrady, Jensen, & Hayaki, 2002; Mulder, 2002). As an example, Babor et al. (1992) and Cloninger (1987) have developed somewhat similar typologies of alcoholics. Those alcoholics classified as Type B in Babor's system and as Type II in Cloninger's system are characterized by a high level of genetic heritability and premorbid vulnerability. They are more likely to be males; to report greater alcohol consumption; to have an earlier onset of alcohol use, problems, and dependence (typically before the age of 25); and to have more alcohol-related antisocial behavior, more severe alcohol dependence, and a higher prevalence of comorbid depression and psychopathology; they also tend to have poorer treatment outcomes (Babor et al., 1992; Carpenter & Hasin, 2001; Driessen, Veltrup, Wetterling, John, & Dilling, 1998). A similar pattern of findings applies to comparable typologies among individuals dependent on cocaine (Ball, Carroll, Babor, & Rounsaville, 1995) and opiates (De, Mattoo, & Basu, 2003), and among obese individuals (Allison & Heshka, 1993).

These typologies not only have significantly more severe substance dependence and poorer treatment outcomes, but they also appear to be associated with differences in coping strategies and behaviors. Chung, Langenbucher, Labouvie, Pandina, and Moos (2001) found that Type B alcoholics used more avoidance coping strategies, such as wishful thinking or venting negative feelings, to manage stressors than did Type A alcoholics. Avoidance coping has been found in previous research to be associated with negative outcomes, including the development of alcohol problems. Lower levels of reliance on cognitive avoidance coping (e.g., daydreaming) predicted fewer alcohol, psychological, and interpersonal problems. Higher levels of behavioral approach coping (e.g., taking action) were associated with lower severity of alcohol problems. Type B alcoholics have been found to benefit differentially more in coping skills training group therapy than do Type A alcoholics (Litt, Babor, DelBoca, Kadden, & Cooney, 1992).

Individuals who have a positive family history and fall into categories such as Type B and Type II are those in whom the preponderance of metabolic, physiological, electrophysiological, and neurobiological deviances are found, consistent with these factors contributing to the predisposition toward alcoholism, drug dependence, and addictive behaviors. Consistent with this, these groups also appear to have differential responses to pharmacotherapies that affect neurotransmitter systems associated with craving and dependence (Chick, Aschauer, Hornik, & Group, 2004; Kranzler, Burleson, Brown, & Babor, 1996; Pettinati et al., 2000). Kranzler and colleagues (1996) reported that Type B alcoholics showed less favorable drinking outcomes in response to treatment with fluoxetine, a serotonin reuptake inhibitor, than with placebo.

This medication effect was not seen in Type A alcoholics, who have lower risk–severity of alcoholism and psychopathology. Johnson and colleagues (2000) found that early-onset alcoholics who received odansetron, a medication that affects the serotonergic system, had significantly better treatment outcomes (e.g., more time abstinent and fewer drinks per drinking day) than those receiving placebo or late-onset alcoholics. Johnson et al. found that odansetron was associated with significant reductions in craving (Johnson, Roache, Ait-Daoud, Zanca, & Velazquez, 2002) and in depression, anxiety, and hostility (Johnson, Ait-Daoud, Ma, & Wang, 2003) among early-onset but not late-onset alcoholics. It was thought that the reduction in craving and mood disturbances, and the more positive outcomes among early-onset alcoholics treated with odansetron were mediated by its ameliorating serotonergic abnormalities in this subtype.

The risk of substance use and substance-related problems is further increased if there is a history of psychiatric disorders in the biological parents. For example, the probability of offspring developing drug dependence is greater among adoptees who had a parent with both substance abuse and antisocial personality disorder when compared to adoptees with a parent having only one of these disorders, or to adoptees in which neither disorder was present in either biological parent (Langbehn, Cadoret, Caspers, Troughton, & Yucuis, 2003). Similarly, Read et al. (1990) found that a combined family history of alcoholism and an additional co-occurring psychiatric disorder were associated with an earlier onset of problem drinking, a more severe course of alcohol dependence, and a greater heterogeneity of psychopathology among first-degree relatives. Langbehn et al. (2003) suggest that the observed biological associations found in the increased vulnerability among individuals with a family history of both substance abuse and psychiatric disorders are broadly consistent with a generalization to Cloninger's Type II or Babor's Type B alcoholism subtypes.

There is also a relatively high rate of co-occurring personality disorders, Axis I psychiatric disorders, and/or concurrent substance abuse or dependence associated with addictive behaviors (Driessen et al., 1998; Havassy, Alvidrez, & Owen, 2004; Lehman, Myers, Thompson, & Corty, 1993). Such individuals represent a challenge to assess (Carey, 1997) and to treat (Drake, Mueser, Brunette, & McHugo, 2004; Kranzler & Rosenthal, 2003). They also experience unique challenges in their own recovery process (Laudet, Magura, Vogel, & Knight, 2000). There appears to be a relative lack of effective treatments for individuals with such co-occurring disorders (Cornelius, Bukstein, Salloum, & Clark, 2003; Watkins, Burnam, Kung, & Paddock, 2001). The presence and severity of concurrent psychiatric and/or substance use problems appear to contribute to poorer treatment outcomes, suggesting that they may serve as potential contributors to relapse risk. Such individuals appear to experience a number of unique, high-risk relapse situations associated with the occurrence or exacerbation of their psychiatric symptomatology, in addition to those associated with their substance dependence (Bradizza & Stasiewicz,

2003). Impaired interpersonal or cognitive problem-solving abilities are also common among this population (Tapert, Ozyurt, Myers, & Brown, 2004). Each of these conditions, independently, creates a backdrop against which alcohol, drugs, tobacco, food, or other behaviors, such as gambling, may be seen as a means of trying to cope with the problems that accompany such disorders.

Another important individual-difference distal factor is the severity of alcohol or substance dependence (Langenbucher, Sulesund, Chung, & Morgenstern, 1996), which may lead to differences in reactivity to substance-related cues and/or in the number and range of cues to which they are conditioned. There is clear evidence that stimuli in the person's environment, as well as interpersonal and intrapersonal cues, can become conditioned stimuli through classical conditioning from repeated pairings of these cues and drinking, drugs use, or smoking (Drummond, 2000; Glautier & Drummond, 1994b; O'Brien, Childress, Ehrman, & Robbins, 1998; Rohsenow, Niaura, Childress, Abrams, & Monti, 1990–1991). Individuals with more severe levels of dependence, and also greater mood disturbances, appear to develop greater reactivity to such cues (Glautier & Drummond, 1994a; Litt, Cooney, & Morse, 2000). Furthermore, it appears that individuals who drink, use drugs, or smoke have an attentional bias that differentially focuses their attention on these conditioned cues (Bradley, Field, Mogg, & De Houwer, 2004; Field, Mogg, & Bradley, 2004a; Field, Mogg, Zetteler, & Bradley, 2004; Waters, Shiffman, Bradley, & Mogg, 2003). Studies with smokers indicate that stronger attentional biases are associated with more repeated unsuccessful attempts at abstinence (Bradley, Mogg, Wright, & Field, 2003) and a greater likelihood of having a lapse shortly following achieving abstinence (Waters, Shiffman, Sayette, et al., 2003). The bias appears stronger following periods of deprivation or abstinence and also appears to lead to increased reports of craving and the perceived pleasantness of smoking-related cues (Field, Mogg, & Bradley, 2004b).

An additional factor contributing to the risk of developing addictive behaviors, and also subsequently enhancing the likelihood of relapse, is the set of cognitive expectancies that individuals develop about the expected outcomes associated with such behaviors. A large body of literature has developed around such expectancies (e.g., Brown, Christiansen, & Goldman, 1987; Goldman, 1994; Oei & Baldwin, 1994), known as outcome expectancies. As noted in the working definition of addiction, underlying motives for engaging in addictive behaviors include both a desire to change one's mood and to increase sociability (Smith & Seymour, 2004). Individuals who develop problems with an addictive behavior typically have developed a set of expectancies that anticipate positive outcomes from engaging in the behavior, serving as a source of motivation to engage in it. Such expectancies appear to develop at a relatively young age and become solidified over time. Miller, Smith, and Goldman (1990; Dunn & Goldman, 1998) found that children as young as 6 years old had already developed alcohol-related expectancies, although they

were somewhat undifferentiated compared to those of older children and adolescents. Children held increasingly positive expectancies as they grew older, with the greatest increases occurring in the third and fourth grades. These findings are consistent with those of Gustafson (1992), who found that positive expectancies for alcohol were already relatively well established by the age of 12 (e.g., sixth grade), before most of the children had any extensive personal drinking experience; these early expectancies developed further in a positive direction between the ages of 12 and 15. Such outcome expectancies are shaped by an individual's past direct and indirect experience with the addictive behavior, including vicarious learning through the modeling they see displayed by parents and peers (Brook et al., 2003; Brown, Tate, & Goldman, 1999; Chassin, Pitts, & Prost, 2002; Connors & Maisto, 1988; Sale, Sambrano, Springer, & Turner, 2003).

A number of expectancy domains have been identified. In early work in this area with alcohol and drug use, Brown (1985, 1993; Brown et al., 1987) delineated six factor-analytically derived domains. Drinking and drug use were anticipated to produce (1) positive global changes in experience, (2) sexual enhancement, (3) social and physical pleasure, (4) social assertiveness, (5) relaxation/tension reduction, and (6) arousal/interpersonal power. Cooper, Russell, Skinner, and Windle (1992) derived three primary dimensions that constituted reasons or motives for drinking: to enhance positive affect, to cope with negative affect, and to enhance social interaction and social activity with friends. To the extent that these expectancies are activated and accessible to the individual in high-risk situations, they appear to determine the anticipated outcomes from engaging in the addictive behavior and to mediate subsequent behavior (Kilbey, Downey, & Breslau, 1998; Palfai & Ostafin, 2003; Rather & Goldman, 1994; Stacy, 1997; Stacy, Leigh, & Weingardt, 1994; Stacy, Newcomb, & Bentler, 1995; Weingardt, Stacy, & Leigh, 1996). Given the attentional bias of substance abusers toward substance-related cues and the association of such cues and the enhanced salience of outcome expectancies and craving, the likelihood of a lapse is markedly increased (Marlatt, 1990).

Shiffman (1989) suggests that a model focusing only on such distal personal background factors is able to predict who will relapse but not when relapse will occur. Such an approach is based on an assumption of a constant risk or relapse proneness. Individuals with certain risk-enhancing characteristics have an elevated likelihood of relapse; however, this potential for relapse may never be actualized unless other events occur. Thus, the background characteristics of the person must interact with situational variables to determine behavior. The assessment model associated with an approach focusing on distal personal characteristics requires only a single assessment at some baseline point, since these relatively stable background variables are thought to serve as predictors. As noted previously, models based solely on distal factors are typically less robust in predicting future behavior than ones that incorporate such distal factors with others in closer proximity to a relapse situation.

Intermediate Background Factors

Shiffman (1989) suggests that distal personal factors and intermediate background factors operate together to “set the stage” or predispose the individual for relapse to occur. The effects of intermediate factors are hypothesized to be cumulative, with their intensity and influence in the person’s life ebbing and flowing contextually during the period of maintaining abstinence. Variables in this category include relatively infrequent major life events that usually require some immediate reaction, as well as more enduring life strain and daily problems. Repeated or continuous exposure to such intermediate background variables leads to increasing levels of stress, with its attendant emotional and behavioral manifestations; at some point, a critical threshold is reached, beyond which a return to the addictive behavior is highly likely. Brady and Sonne (1999) have noted that stress and the body’s response to it most likely play a role in the vulnerability to initial alcohol and substance use and dependence, and in seeking treatment for substance abuse and relapse. Brown, Vik, Patterson, Grant, and Schuckit (1995) found that alcoholics experiencing highly threatening or chronic psychosocial stress following treatment were more likely to relapse than were abstaining individuals not experiencing such stress. Improved psychosocial functioning following treatment, in particular, increased levels of coping, self-efficacy, and social support, enhanced the ability of these individuals to remain abstinent despite severe stress. These life strains may reflect issues of the individual’s lifestyle, including the imbalance between “wants” and “shoulds” that Marlatt has described as increasing a sense of deprivation that leads to an increased desire to indulge, increased levels of craving, and an increased risk of relapse (Larimer et al., 1999; Marlatt & Gordon, 1985).

One cannot measure the occurrence or magnitude of such intermediate variables in isolation; rather, they must be viewed in relation to the individual’s social and environmental supports, general sense of efficacy or perceived control, and the ability to anticipate, avoid, and/or cope with the resultant stress. At the point that the stress level exceeds the individual’s ability to cope, the perceived and anticipated positive benefits of the addictive behavior are likely to be more salient, and the risk of relapse may be potentiated into actual use.

The assessment of coping, in general (Moos & Holahan, 2003), and more specifically in relation to relapse, is no easy task (Shiffman, 1987, 1989; Shiffman & Wills, 1985). However, this construct plays a central role in the conceptualization of relapse and relapse prevention. This model views the individual as having deficits in his or her coping skills, both general and addiction-specific, and that the individual drinks, uses drugs, or engages in other addictive behaviors as a means of trying to deal with emotional distress and other high-risk situations in the absence of appropriate or effective coping skills. Consistent with this, Carpenter and Hasin (1999) found that drinking to cope was associated with the development of alcohol dependence.

Holahan, Moos, Holahan, Cronkite, and Randall (2001) investigated a form of avoidance coping, drinking to cope with emotional distress, in a large community-based sample of adults who were followed prospectively over a 10-year period. They found that a measure of drinking to cope at the initial baseline assessment predicted alcohol consumption and the development of problem drinking across the ensuing 10-year period. Initial drinking to cope also was found to mediate the relationship between emotional distress and drinking behavior. Furthermore, increases in drinking to cope over the 10-year period were associated with increases in drinking behavior, and decreases in drinking to cope were linked to decreases in drinking behavior.

Moos and Holahan (2003) distinguish between two general types of coping. The first is a relatively stable, trait-like coping style or dispositions that characterizes the individual's typical and habitual manner of interacting with the environment. The components of these dispositions involve relatively stable and enduring personality, attitudinal, and cognitive characteristics that represent the psychological context for coping. These include factors such as defensive style and general problem-solving abilities. This concept of coping style appears to fall into Shiffman's (1989) category of distal factors.

The second type involves the cognitive and behavioral coping responses or skills that the individual employs to manage specific stressful encounters. These skills are context- and situation-specific. Perspectives that emphasize coping styles versus coping skills reflect contrasting assumptions about the underlying determinants of the coping process. Stylistic or dispositional approaches assume that relatively stable, person-based factors underlie habitual coping efforts. Contextual approaches assume that more transitory, situation-based factors shape individuals' cognitive appraisals and their choice of specific coping responses. Schwartz, Neale, Marco, Shiffman, and Stone (1999) compared typical methods of assessing trait coping by using retrospective, summary questionnaires, with data from multiple, momentary reports of the use of the same coping cognitions and behaviors. They found that approximately 15–30% of the variability in momentary reports of how people are coping with a current stressor was attributable to consistent interpersonal differences in coping. Two types of coping, escape–avoidance coping and use of religion, exhibited stronger trait-like properties. Thus, while there appears to be evidence of a more stable coping style, successful coping may require the ability to deal with the stresses or temptations embedded in a specific high-risk situation. Consistent with this, Shiffman (1989) found a degree of consistency of behavioral coping strategies used across different relapse situations, whereas cognitive coping showed no cross-situation consistency.

It is of interest to note that short-term (within 48 hours) retrospective reports of the types of coping used to deal with stressful events do not correspond well with reports done using ecological momentary assessment close in time to when the stressor occurred (Stone et al., 1998). From an assessment perspective, such findings suggest that trait-like measures of coping style may not provide an accurate or sufficient picture of how the person will behave in

high-risk situations. To the extent that one is able to get near-real-time assessments via ecological momentary assessment procedures or through the use of behavioral observations of how an individual handles simulated high-risk situations, prediction to actual high-risk situations will be improved (e.g., Drobos, Meier, & Tiffany, 1994; Monti et al., 1993).

As noted previously, Marlatt's relapse model is based on the premise that the individual is deficient in those skills necessary to cope with general stress and the more immediate demands of high-risk relapse situations. Considerable data support this tenet of the relapse prevention model (Miller et al., 1996). Therefore, it is important to assess the relative strengths and deficits in the individual's repertoire of coping abilities and skills (Monti et al., 1994; Monti & O'Leary, 1999). It is also important to assess the individual's ability to use or to deploy available coping strategies (Saunders & Allsop, 1987). In many instances, individuals appear to have the necessary coping abilities, yet they may not use them. It is important to determine the cognitive, psychological, and/or behavioral barriers that lead such individuals to resume drinking, drug use, or engagement in an addictive behavior rather than to use those skills available to them to prevent a relapse.

A number of different dimensions of coping need to be considered in the assessment process. These are presented in Table 1.2. First is the general domain in which the coping response occurs: affective, behavioral, and/or cognitive. In some of the earliest work on coping and alcohol dependence, Litman (Litman, 1986; Litman, Stapleton, Oppenheim, Peleg, & Jackson, 1984) identified a number of behavioral and cognitive strategies that protect against relapse. These appear to operate somewhat sequentially, from the point of initiating abstinence to more prolonged maintenance. Individuals who successfully avoided relapse initially appeared to have relied on behavioral avoidance of potential high-risk situations and, if they encountered such situations, sought out social support for continued sobriety. With longer periods of abstinence,

TABLE 1.2. Dimensions of Coping to Be Considered in the Assessment of Relapse Risk

-
- Types of coping strategies
 - Behavioral
 - Cognitive
 - Affective
 - Availability, strength, and deployability of coping skills
 - Frequency of use versus effectiveness when used
 - Stress-coping versus temptation-coping
 - Static versus dynamic nature of coping skill
 - Stages of coping
 - Anticipatory
 - Immediate
 - Restorative
-

Note. From Donovan (1996a, p. 534). Copyright 1996 by Blackwell Publishing. Reprinted by permission.

there appears to be a transition from predominantly behavioral strategies toward a greater reliance on cognitive coping. These cognitive strategies include thinking about the negative consequences of drinking in the past and, subsequently, thinking about the positive benefits derived from having achieved and maintained abstinence.

A number of studies across addictive behaviors have investigated the role of the type of coping strategies used and the likelihood of relapse. Breslin et al. (1996) evaluated the coping behaviors (cognitive or behavioral; active or avoidant) that problem drinkers reported using to avoid relapsing in high-risk situations. The proportion of cognitive coping responses (e.g., thinking through the consequences) was positively related to posttreatment improvement. Chung et al. (2001) looked at the relationship between changes in coping and drinking behavior over a 12-month period following treatment. They found that cognitive appraisal of threat showed a trend toward predicting avoidance coping at 6- and 12-month follow-ups. Decreased cognitive avoidance coping (e.g., daydreaming) predicted fewer alcohol, psychological, and interpersonal problems. Increased behavioral approach coping (e.g., taking action) predicted lower severity of alcohol problems.

Litman's (1986) results suggest that individuals with a greater diversity or range of available coping abilities, and the flexibility to shift adaptively among them as needed, are more likely to maintain sobriety. Related to this, Allsop and Saunders (1989) suggested that a restricted coping repertoire is thought to increase the likelihood of relapse. Moser and Annis (1996) found that survival of a relapse crisis among drinkers was most strongly related to the number of coping strategies used. Shiffman, Paty, Gnys, Kassel, and Hickcox (1996) found that smokers were 12 times more likely to report that they had coped in high-risk situations that they survived than those in which they lapsed. Myers and Brown (1990) found that adolescents with the poorest drug use outcomes following treatment reported use of significantly fewer problem-solving coping strategies and less self-efficacy in general high-risk relapse situations. However, only cognitive (vs. behavioral) coping strategies were effective. Bliss, Garvey, Heinold, and Hitchcock (1989) found that the successful survival of a relapse crisis by smokers was most strongly related to the number of coping strategies used, with no differences in the relative effectiveness across cognitive and behavioral coping strategies. Similarly, Grilo, Shiffman, and Wing (1993) examined dieters' attempts to cope with dietary relapse crises among obese subjects with type II diabetes. Performance of some form of coping response when confronted by the risk of relapse resulted in surviving the immediate crises without a lapse. However, there were no differences in outcome based on the specific type of cognitive or behavioral coping employed. Stoffelmayr, Wadland, and Pan (2003), analyzing information about nearly 3,000 smoking urge/lapse situations and the coping that occurred in these, found that the number of coping responses rather than number of high-risk situations encountered was related to more successful treatment outcome, and that the more coping responses discussed during treatment, the better the treatment outcome.

In addition to the type of coping strategies and the frequency with which they are used, their relative effectiveness must also be determined. Individuals may persist in using coping strategies that were effective at one point in the past or in certain situations but may no longer be appropriate or effective. The continued use of such inadequate strategies may contribute to a decreased sense of self-efficacy. Litman (1986) found that the rated effectiveness of the behavioral and cognitive coping strategies employed by the individual was more strongly related to avoiding relapse than was the absolute number of coping strategies employed. Those individuals who at intake described themselves as having more effective coping skills in general, and those who reported using behavioral avoidance and positive thinking about the anticipated benefits of sobriety, were more likely to have remained abstinent following treatment. Similarly, Connors, Longabaugh, and Miller (1996), based on results from the RREP, found that the availability of coping skills was a potent protective factor, and that the use of ineffective coping was a consistent predictor of relapse. Different coping strategies may be more or less effective depending on the target of their application. Some strategies that may be appropriate and effective in dealing with generalized stress may be less effective in dealing with temptation and craving in specific high-risk situations. It may be inappropriate to assume that an effective general coping strategy will generalize to and be equally effective in dealing with drinking-related temptations.

Two other considerations include the extent to which coping skills are static or dynamic and the role or function they serve in a potential relapse process. Coping appears to be a dynamic process (Marlatt, 1996a; Witkiewitz & Marlatt, 2004). Relapse prevention approaches work toward increasing skills in those areas in which the individual is deficient and toward increased use of effective strategies. Increases in these skills have been associated with improved outcomes across a variety of addictive behaviors. Litman (1986) found that while relapsers and nonrelapsers did not differ with respect to their coping abilities at intake to treatment, those who did not relapse showed significantly greater increases in their use of positive thinking and decreases in the use of behavioral avoidance from intake to the end of treatment. Increases in coping skills over time and treatment have been associated with better outcomes (Brown et al., 1995; Holahan et al., 2001; Kadden, 1995, 1999; Monti, Abrams, Kadden, & Cooney, 1989; Monti, Rohsenow, Colby, & Abrams, 1995).

The role or function of coping also changes depending on the stage in a potential relapse process (Shiffman, 1989). Anticipatory coping allows the individual to attempt to anticipate stresses or high-risk situations and, if unable to do so, to develop plans to avoid them and/or deal with the resultant stresses. Immediate coping strategies, needed while in the midst of a relapse crisis, deal much more with specific aspects of high-risk situations, temptation, and craving. Restorative coping strategies may be used after a lapse. They function to minimize the affective and cognitive components of the AVE, and to minimize the transition of a lapse into a more prolonged and serious relapse.

The results of research on the AVE as a theoretical construct and the specific elements that are thought to comprise it have been mixed (Birke, Edelman, & Davis, 1990; Borland, 1992; Curry, Marlatt, & Gordon, 1987; Dohm, Beattie, Aibel, & Striegel-Moore, 2001; Grilo & Shiffman, 1994; Hudson, Ward, & Marshall, 1992; Mooney, Burling, Hartman, & Brenner-Liss, 1992; Ross, Miller, Emmerson, & Todt, 1988–1989; Schmitz, Rosenfarb, & Payne, 1993; Shiffman, Hickcox, et al., 1996; Stephens, Curtin, Simpson, & Roffman, 1994; Ward, Hudson, & Bulik, 1993). However, the role of restorative coping has been evidenced. Grilo et al. (1993) found that among women dieters who had a lapse, restorative behavioral coping was elicited as a response to overeating, while restorative cognitive coping seemed to be elicited by the negative thoughts and feelings that sometimes accompany lapses or temptations. Dohm et al. (2001), also working with dieters, found that those who were able to reduce their weight and maintain it, in contrast to those who were unable to maintain their reduced weight, were more likely to use direct coping and less likely to seek help. Shiffman, Hickcox, et al. (1996) found that smokers who attempted restorative coping were less likely to progress to another lapse on the same day. The pattern of such results leads to a conclusion similar to that of Dohm et al. (2001), who indicated that the most useful variables for differentiating between successful and unsuccessful weight loss maintainers may involve how individuals respond to a dietary lapse. The same appears to hold for other addictive behaviors as well.

An important element in determining the likelihood of relapse is the individual's commitment to or motivation for self-improvement (Donovan & Rosengren, 1999). Often individuals find themselves in stressful situations for which they have the prerequisite coping strategies, yet their commitment to self-improvement may be insufficient to lead them to use them. Allsop and Saunders (1989) and Baer and colleagues (1999) indicated that any analysis of relapse needs to examine the interaction between commitment and coping skills. Even well-developed coping abilities will not prevent relapse if the individual's commitment is weak; conversely, strong commitment may be insufficient in the absence of adequate coping skills. Thus, it is important to assess this commitment and motivation to change. Prochaska, DiClemente, and Norcross (1992) have suggested that this variable, like other intermediate background variables, also ebbs and flows. This suggests the need for repeated assessments in order to monitor periodically the relative strengths of the intermediate factors that either contribute to or protect against the likelihood of relapse as they vary in intensity across time. Also, it appears that certain interventions may be appropriate for individuals at different stages of readiness (Connors, Donovan, & DiClemente, 2001). Rohsenow and colleagues (2004) evaluated the effectiveness of motivational enhancement therapy and group coping skills treatment in cocaine abusers. The motivational intervention had better substance use outcomes with individuals having a low level of initial motivation to change when compared to those with higher levels of initial motivation.

Proximal Precipitating Factors

The individual will eventually encounter high-risk situations. Marlatt's relapse taxonomy provides a conceptual and methodological framework within which to understand and classify the inter- and intrapersonal factors associated with such situations. Shiffman (1989) has suggested that an exclusive focus on situational determinants in the immediate situation represents an episodic model, which implies that relapse is relatively precipitous and potentially unpredictable.

A cognitive construct that is appropriate to this phase of the relapse process is the level of self-efficacy (Annis & Davis, 1988; Bandura, 1977, 1997; DiClemente, Fairhurst, & Piotrowski, 1995). Self-efficacy has been found fairly consistently to predict treatment outcome; low levels of self-efficacy are predictive of relapse (Drobes et al., 1994; Monti et al., 2001). This construct, which appears to be intimately related to the individual's coping abilities, reflects the degree of confidence the individual has about being confronted with a high-risk relapse situation and successfully avoiding a lapse. For example, Myers and Brown (1990) found that adolescents with the poorest drug use outcome following treatment reported use of significantly fewer problem-solving coping strategies and had less self-efficacy in general high-risk relapse situations. Also, Gwaltney et al. (2002) found that affective and environmental contexts, or situations in which the individual had low levels of abstinence self-efficacy, were associated with lapses among smokers.

Scales of self-efficacy, such as the IDS (Annis et al., 1987) and the Situational Confidence Questionnaire (SCQ; Annis & Graham, 1988), the Alcohol Abstinence Self-Efficacy Questionnaire (DiClemente, Carbonari, Montgomery, & Hughes, 1994), the Drug-Taking Confidence Questionnaire (Sklar, Annis, & Turner, 1997), the Drug Avoidance Self-Efficacy Scale (Martin, Pollock, Cornelius, Lynch, & Martin, 1995), the Smoking Self-Efficacy Questionnaire (Etter, Bergman, Humair, & Perneger, 2000), and others like them, allow self-report and dimensional ratings of the potential temptation or risk associated with a number of situations as well as one's perceived efficacy to deal with them. However, since the situations identified by such measures have only been associated with heavy substance use, one cannot assume a causal link between the types of situations endorsed and the likelihood of relapse (Sobell, Toneatto, & Sobell, 1994). Sobell et al. also indicated that it is important to explore in more depth the unique and personally relevant high-risk situations or areas in which the individual lacks self-confidence or self-efficacy. Gwaltney et al. (2001) found that it is possible to assess the level of self-efficacy for specific situational contexts, thus potentially enabling identification in advance of the situations in which an individual is most likely to lapse. Such context-specific assessments may help to identify not only who will lapse but also the situations in which the lapse will occur (Gwaltney et al., 2001). Given the relationship between self-efficacy and relapse, a number of authors have recommended that self-efficacy should be the appropriate target for interventions (e.g., Vielva & Iraurgi, 2001).

The more immediate and specific aspects of these situations are important to consider, yet are extremely difficult to assess in the moment given their transient and rapidly changing nature. Hodgins and colleagues (Hodgins & el-Guebaly, 2004; Hodgins et al., 1995) have presented a method of assessing mood states in a repeated fashion, so that they will be more contiguous in time to possible lapse, “close call,” or relapse “crisis” situations. It is precisely for this type of circumstance that the ecological momentary assessment procedure was developed (Stone et al., 1998). Using this procedure, Shiffman et al. (2000) found that the level of self-efficacy remained relatively high and stable prior to an initial lapse following treatment for smoking; however, it decreased and became more variable after an initial lapse, demonstrating the dynamic nature of efficacy. Similar methods may be usefully employed to assess the nature of the individual’s relapse-enhancing or coping-related self-statements preceding or during a potential relapse situation and the degree of craving experienced.

It is likely that the elements of a high-risk situation will elicit a conditioned response to the substance-related cues in the situation, leading to craving and an increased salience of the desired effects of alcohol, drugs, or other addictive behaviors. Heather (Heather & Stallard, 1989; Heather, Stallard, & Tebbutt, 1991) has argued that Marlatt’s model pays insufficient attention to the role of craving as a precipitant, in part due to restrictions in the relapse coding guidelines that make assignment of relapses to craving as a precipitant less likely. There has been an increased focus on cue reactivity and craving across a number of addictive behaviors. Heather and Stallard (1989) suggested that craving may serve as the most proximal common pathway through which other interpersonal and intrapersonal factors exert their influence on the probability of relapse.

Monti, Rohsenow, and Hutchison (2000) and Niaura (2000) suggest that it is in the experience and process of craving that the elements of the biopsychosocial model come together. An individual who is genetically more vulnerable due to a family history of addiction and the modeling of parents and peers has an attentional bias that more readily attracts attention to addiction-related cues in situational contexts that threaten his or her perception of control, with a wide range of cues that have been classically conditioned through prior experience to elicit craving, urges, and a strong desire to use in that situation. Such an individual with a deficit in general problem solving, and both general and substance-specific coping skills, and a resultant decrease in self-efficacy, and with an increased focus on the anticipated positive effects of alcohol, drugs, or another addictive behavior, is at extreme risk of a lapse.

Transitional Factors

Marlatt and Gordon (1985) and Saunders and Allsop (1987) suggest that the factors that trigger an initial lapse are different from those that contribute to continued drinking, drug use, or other addictive behavior or a more prolonged relapse. Marlatt’s model focuses to a large extent on the tendency to personal-

ize the responsibility for the relapse (an internal attribution) and the negative emotions, such as guilt, remorse, depression, and self-directed anger, that often accompany a relapse, as factors contributing to the transition from lapse to relapse. However, the results of studies investigating the AVE have been mixed (Birke et al., 1990; Curry et al., 1987; Grilo & Shiffman, 1994; Hudson et al., 1992; Mooney et al., 1992; Ross et al., 1988–1989; Shiffman, Hickcox, et al., 1996; Stephens et al., 1994; Ward et al., 1993). Other factors, such as the individual's restorative coping abilities to deal with the negative consequences and emotions, the reaction of family and friends, and the individual's commitment to return to abstinence or moderation/harm reduction, must also be considered. Shiffman, Hickcox, et al. (1996) found that self-efficacy, attributions, and affective reactions to a lapse generally failed to predict progression from an initial lapse to continued use as predicted by the AVE. However, smokers who felt like giving up after an initial lapse progressed more rapidly to a second lapse. Those who attempted restorative coping were less likely to progress to another lapse on the same day.

Dohm et al. (2001) suggest that while their results failed to support the AVE, the most useful variables for differentiating between successful and unsuccessful weight loss maintainers may involve how they respond to a lapse. In addition, the reactions of friends and family members, comprising the individual's social network, are equally important (Beattie & Longabaugh, 1999; Beattie et al., 1993; Longabaugh, 2003). Brown et al. (1995) found that increased coping skills and social networks were related to continued abstinence among drinkers despite their experiencing severe stress. McKay, Merikle, Mulvaney, Weiss, and Koppenhaver (2001) found that support from one's family is an important factor in the outcome of cocaine addicts. It is not just general social support that needs to be taken into account. Support by family and friends for one's treatment goal—to stop drinking, using drugs, or engaging in other addictive behaviors—may be more important (Beattie & Longabaugh, 1999; Beattie et al., 1993; Longabaugh, 2003). While both general and alcohol-specific support were related to reduced drinking behavior among alcoholics over the first 3 months following treatment, only alcohol-specific support helped explain variance over the longer term (15 months posttreatment). Beattie and Longabaugh (1999) concluded that knowing how different types of social support affect drinking behavior at different intervals following treatment may help treatment providers better prepare their clients for the posttreatment social environment.

CONCLUSIONS

Addictive behaviors are complex disorders, with clear contributions of genetic predispositions; psychological vulnerabilities; personality traits and temperaments; cognitive expectations about the anticipated benefits derived from drinking, drug use, or engaging in other addictive behaviors; and lack of adequate coping skills and an attendant low level of self-efficacy. This vulnerabil-

ity appears to be actuated in a social context in which family and friends serve as models. These factors appear to interact and covary dynamically across time, exerting differential influence at different points along the developmental path in the development, maintenance, and treatment–cessation of the particular addictive behavior.

Relapse is also a complex process. Models that focus exclusively on distal, intermediate, or proximal factors are likely to be inadequate in predicting relapse. Rather, relapse is best understood as having multiple and interactive determinants that vary in temporal proximity and relative influence on relapse. An adequate assessment model must be sufficiently comprehensive to include theoretically relevant variables from each of the multiple domains and different levels of potential predictors. The recently revised model of relapse (Witkiewitz & Marlatt, 2004) has incorporated and elaborated on the dynamic interplay of factors from the biopsychosocial model, from distal to proximal. As such, it will likely provide the field with an updated model in which the determination of relapse precipitants will be more reliable and valid (Donovan, 1996a, 1996b; Marlatt, 1996a, 1996b), and provide better predictive utility in identifying areas of concern, relative to what the individual brings with him or her and in the context of situations perceived as having a high risk of relapse.

The remaining chapters in this volume focus on the application of the heuristic framework that the relapse model provides for the assessment of addictive behaviors. Each chapter provides both a general overview of the assessment issues and process for the particular addictive behavior being covered and information about specific measures that have been developed to assess different aspects of the biopsychosocial model. The goal is to provide a companion volume that interfaces with the application of relapse prevention techniques. Used together, this volume and *Relapse Prevention* (Marlatt & Donovan, 2005) provide information needed to conduct a targeted assessment of relapse risk factors for a given addictive behavior and to develop an appropriate individualized treatment plan to prevent relapse from occurring and to minimize harm, if relapse does occur.

ACKNOWLEDGMENTS

The preparation of this chapter was supported in part by Grant Nos. U10 AA11799 from the National Institute on Alcohol Abuse and Alcoholism and U10 DA13714 from the National Institute on Drug Abuse.

REFERENCES

- Allison, D. B., & Heshka, S. (1993). Toward an empirically derived typology of obese persons: Derivation in a nonclinical sample. *International Journal of Eating Disorders, 13*(1), 93–108.

- Allsop, S., & Saunders, B. (1989). Relapse and alcohol problems. In M. Gossop (Ed.), *Relapse and addictive behavior* (pp. 11–40). New York: Tavistock/Routledge.
- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.
- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text rev.). Washington, DC: Author.
- Annis, H., & Davis, C. S. (1988). Self-efficacy and the prevention of alcoholic relapse: Initial findings from a treatment trial. In T. B. Baker & D. S. Cannon (Eds.), *Assessment and treatment of addictive disorders* (pp. 88–112). New York: Praeger.
- Annis, H. M. (1991). A cognitive–social learning approach to relapse: Pharmacotherapy and relapse prevention counselling. *Alcohol and Alcoholism Supplement*, 1, 527–530.
- Annis, H. M., & Graham, J. M. (1988). *Situational Confidence Questionnaire user's guide*. Toronto: Addiction Research Foundation of Ontario.
- Annis, H. M., Graham, J. M., & Davis, C. S. (1987). *Inventory of Drinking Situations (IDS) user's guide*. Toronto: Addiction Research Foundation.
- Babor, T. F., Hofmann, M., DelBoca, F. K., Hesselbrock, V., Meyer, R. E., Dolinsky, Z. S., & Rounsaville, B. (1992). Types of alcoholics: I. Evidence for an empirically derived typology based on indicators of vulnerability and severity. *Archives of General Psychiatry*, 49(8), 599–608.
- Baer, J. S., Kivlahan, D. R., & Donovan, D. M. (1999). Integrating skills training and motivational therapies: Implications for the treatment of substance dependence. *Journal of Substance Abuse Treatment*, 17(1–2), 15–23.
- Ball, S. A., Carroll, K. M., Babor, T. F., & Rounsaville, B. J. (1995). Subtypes of cocaine abusers: Support for a type A–type B distinction. *Journal of Consulting and Clinical Psychology*, 63(1), 115–124.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191–215.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.
- Beattie, M. C., & Longabaugh, R. (1999). General and alcohol-specific social support following treatment. *Addictive Behaviors*, 24(5), 593–606.
- Beattie, M. C., Longabaugh, R., Elliott, G., Stout, R. L., Fava, J., & Noel, N. E. (1993). Effect of the social environment on alcohol involvement and subjective well-being prior to alcoholism treatment. *Journal of Studies on Alcohol*, 54(3), 283–296.
- Bierut, L. J., Dinwiddie, S. H., Begleiter, H., Crowe, R. R., Hesselbrock, V., Nurnberger, J. I., Jr., Porjesz, B., Schuckit, M. A., & Reich, T. (1998). Familial transmission of substance dependence: Alcohol, marijuana, cocaine, and habitual smoking: A report from the collaborative study on the genetics of alcoholism. *Archives of General Psychiatry*, 55, 982–988.
- Birke, S. A., Edelman, R. J., & Davis, P. E. (1990). An analysis of the abstinence violation effect in a sample of illicit drug users. *British Journal on Addictions*, 85(10), 1299–1397.
- Bliss, R. E., Garvey, A. J., Heinold, J. W., & Hitchcock, J. L. (1989). The influence of situation and coping on relapse crisis outcomes after smoking cessation. *Journal of Consulting and Clinical Psychology*, 57(3), 443–449.
- Borland, R. (1992). Relationships between mood around slip-up and recovery of abstinence in smoking cessation attempts. *International Journal of Addictions*, 27(9), 1079–1086.

- Bradizza, C. M., & Stasiewicz, P. R. (2003). Qualitative analysis of high-risk drug and alcohol use situations among severely mentally ill substance abusers. *Addictive Behaviors, 28*(1), 157–169.
- Bradley, B., Field, M., Mogg, K., & De Houwer, J. (2004). Attentional and evaluative biases for smoking cues in nicotine dependence: Component processes of biases in visual orienting. *Behavioral Pharmacology, 15*(1), 29–36.
- Bradley, B. P., Mogg, K., Wright, T., & Field, M. (2003). Attentional bias in drug dependence: Vigilance for cigarette-related cues in smokers. *Psychology of Addictive Behaviors, 17*(1), 66–72.
- Bradley, B. P. (1990). Behavioural addictions: Common features and treatment implications. *British Journal of Addiction, 85*(11), 1417–1419.
- Brady, K. T., & Sonne, S. C. (1999). The role of stress in alcohol use, alcoholism treatment, and relapse. *Alcohol Research and Health, 23*(4), 263–271.
- Breslin, C., Sobell, L. C., Sobell, M. B., Buchan, G., & Kwan, E. (1996). Aftercare telephone contacts with problem drinkers can serve a clinical and research function. *Addiction, 91*(9), 1359–1364.
- Breslin, C., Sobell, M. B., Sobell, L. C., Sdao-Jarvie, K., & Sagorsky, L. (1996). Relationship between posttreatment drinking and alternative responses to high-risk situations proposed during treatment by problem drinkers. *Journal of Substance Abuse, 8*(4), 479–486.
- Brook, D. W., Brook, J. S., Rubenstone, E., Zhang, C., Singer, M., & Duke, M. R. (2003). Alcohol use in adolescents whose fathers abuse drugs. *Journal of Addictive Diseases, 22*(1), 11–34.
- Brown, S. A. (1985). Reinforcement expectancies and alcoholism treatment outcome after a one-year follow-up. *Journal of Studies on Alcohol, 46*(4), 304–308.
- Brown, S. A. (1993). Drug effect expectancies and addictive behavior change. *Experimental and Clinical Psychopharmacology, 1*(1–4), 55–67.
- Brown, S. A., Christiansen, B. A., & Goldman, M. S. (1987). The Alcohol Expectancy Questionnaire: An instrument for the assessment of adolescent and adult alcohol expectancies. *Journal of Studies on Alcohol, 48*(5), 483–491.
- Brown, S. A., Tate, S. R., & Goldman, M. S. (1999). Modeling of alcohol use mediates the effect of family history of alcoholism on adolescent alcohol expectancies. *Experimental and Clinical Psychopharmacology, 7*(1), 20–27.
- Brown, S. A., Vik, P. W., Patterson, T. L., Grant, I., & Schuckit, M. A. (1995). Stress, vulnerability and adult alcohol relapse. *Journal of Studies on Alcohol, 56*(5), 538–545.
- Cannon, D. S., Leeka, J. K., Patterson, E. T., & Baker, T. B. (1990). Principal components analysis of the inventory of drinking situations: Empirical categories of drinking by alcoholics. *Addictive Behaviors, 15*(3), 265–269.
- Carels, R. A., Douglass, O. M., Cacciapaglia, H. M., & O'Brien, W. H. (2004). An ecological momentary assessment of relapse crises in dieting. *Journal of Consulting and Clinical Psychology, 72*(2), 341–348.
- Carey, K. B. (1997). Challenges in assessing substance use patterns in persons with comorbid mental and addictive disorders. In L. S. Onken, J. Blaine, S. Genser, J. Horton, & A. M. Horton, Jr. (Eds.), *Treatment of drug-dependent individuals with comorbid mental disorders* (pp. 16–32). Rockville, MD: National Institute on Drug Abuse.
- Carey, K. B., & Correia, C. J. (1998). Severe mental illness and addictions: Assessment considerations. *Addictive Behaviors, 23*(6), 735–748.

- Carpenter, K. M., & Hasin, D. S. (1999). Drinking to cope with negative affect and DSM-IV alcohol use disorders: A test of three alternative explanations. *Journal of Studies on Alcohol*, 60(5), 694–704.
- Carpenter, K. M., & Hasin, D. S. (2001). Reliability and discriminant validity of the Type I/II and Type A/B alcoholic subtype classifications in untreated problem drinkers: A test of the Apollonian–Dionysian hypothesis. *Drug and Alcohol Dependence*, 63(1), 51–67.
- Carroll, K. M. (1996). Relapse prevention as a psychosocial treatment: A review of controlled clinical trials. *Experimental and Clinical Psychopharmacology*, 4(1), 46–54.
- Carroll, K. M., & Rounsaville, B. J. (2002). On beyond urine: Clinically useful assessment instruments in the treatment of drug dependence. *Behaviour Research and Therapy*, 40(11), 1329–1344.
- Chassin, L., Pitts, S. C., & Prost, J. (2002). Binge drinking trajectories from adolescence to emerging adulthood in a high-risk sample: Predictors and substance abuse outcomes. *Journal of Consulting and Clinical Psychology*, 70(1), 67–78.
- Chiauzzi, E. J. (1991). *Preventing relapse in addictions: A biopsychosocial approach*. New York: Pergamon Press.
- Chick, J., Aschauer, H., Hornik, K., & Group, I. (2004). Efficacy of fluvoxamine in preventing relapse in alcohol dependence: A one-year, double-blind, placebo-controlled multicentre study with analysis by typology. *Drug and Alcohol Dependence*, 74(1), 61–70.
- Chung, T., Langenbucher, J., Labouvie, E., Pandina, R. J., & Moos, R. H. (2001). Changes in alcoholic patients' coping responses predict 12-month treatment outcomes. *Journal of Consulting and Clinical Psychology*, 69(1), 92–100.
- Cloninger, C. R. (1987). Neurogenetic adaptive mechanisms in alcoholism. *Science*, 23, 410–416.
- Collins, R. L., Morsheimer, E. T., Shiffman, S., Pat, Y. J. A., Gnys, M., & Papandonatos, G. D. (1998). Ecological momentary assessment in a behavioral drinking moderation training program. *Experimental and Clinical Psychopharmacology*, 6(3), 306–315.
- Connors, G. J., Donovan, D. M., & DiClemente, C. C. (2001). *Substance abuse treatment and the stages of change: Selecting and planning interventions*. New York: Guilford Press.
- Connors, G. J., Longabaugh, R., & Miller, W. R. (1996). Looking forward and back to relapse: Implications for research and practice. *Addiction*, 91(Suppl. 12), S191–S196.
- Connors, G. J., & Maisto, S. A. (1988). The alcohol expectancy construct: Overview and clinical applications. *Cognitive Research and Practice*, 12, 487–504.
- Connors, G. J., Maisto, S. A., & Donovan, D. M. (1996). Conceptualizations of relapse: A summary of psychological and psychobiological models. *Addiction*, 91(Suppl. 12), 5–13.
- Cooper, M. L., Russell, M., Skinner, J. B., & Windle, M. (1992). Development and validation of a three-dimensional measure of drinking motives. *Psychological Assessment*, 4, 123–132.
- Cornelius, J. R., Bukstein, O., Salloum, I., & Clark, D. (2003). Alcohol and psychiatric comorbidity. *Recent Developments in Alcoholism*, 16, 361–374.
- Cummings, C., Gordon, J. R., & Marlatt, G. A. (1980). Relapse: Strategies of prevention and prediction. In W. R. Miller (Ed.), *The addictive behaviors* (pp. 291–321). Elmsford, NY: Pergamon Press.

- Curry, S., Marlatt, G. A., & Gordon, J. R. (1987). Abstinence violation effect: Validation of an attributional construct with smoking cessation. *Journal of Consulting and Clinical Psychology, 55*(2), 145–149.
- Curry, S., Marlatt, G. A., Peterson, A. V., & Lutton, J. (1988). Survival analysis and assessment of relapse. In D. M. Donovan & G. A. Marlatt (Eds.), *Assessment of addictive behaviors* (pp. 454–483). New York: Guilford Press.
- De, B., Mattoo, S. K., & Basu, D. (2003). Age at onset typology in opioid-dependent men: An exploratory study from India. *American Journal of Addictions, 12*(4), 336–345.
- DiClemente, C. C., Carbonari, J. P., Montgomery, R. P., & Hughes, S. O. (1994). The Alcohol Abstinence Self-Efficacy scale. *Journal of Studies on Alcohol, 55*(2), 141–148.
- DiClemente, C. C., Fairhurst, S. K., & Piotrowski, N. A. (1995). Self-efficacy and addictive behaviors. In J. E. Maddux (Ed.), *Self-efficacy, adaptation, and adjustment: Theory, research, and application* (pp. 109–141). New York: Plenum Press.
- Dohm, F. A., Beattie, J. A., Aibel, C., & Striegel-Moore, R. H. (2001). Factors differentiating women and men who successfully maintain weight loss from women and men who do not. *Journal of Clinical Psychology, 57*(1), 105–117.
- Donovan, D. M. (1988). Assessment of addictive behaviors: Implications of an emerging biopsychosocial model. In D. M. Donovan & G. A. Marlatt (Eds.), *Assessment of addictive behaviors* (pp. 3–48). New York: Guilford Press.
- Donovan, D. M. (1996a). Assessment issues and domains in the prediction of relapse. *Addiction, 91*(Suppl. 12), S29–S36.
- Donovan, D. M. (1996b). Marlatt's classification of relapse precipitants: Is the Emperor still wearing clothes? *Addiction, 91*(Suppl. 12), S131–S137.
- Donovan, D. M. (1998). Assessment and interviewing strategies in addictive behaviors. In B. S. McCrady & E. E. Epstein (Eds.), *Addictions: A comprehensive guidebook for practitioners* (pp. 187–215). New York: Oxford University Press.
- Donovan, D. M. (2003a). Assessments to aid in the treatment planning process. In J. P. Allen & V. Wilson (Eds.), *Assessing alcohol problems: A guide for clinicians and researchers* (2nd ed., pp. 125–188). Rockville, MD: National Institute on Alcohol Abuse and Alcoholism, U.S. Department of Health and Human Services, Public Health Service, National Institutes of Health.
- Donovan, D. M. (2003b). Relapse prevention in substance abuse treatment. In J. L. Sorensen, R. Rawson, J. R. Guydish, & J. E. Zweben (Eds.), *Drug abuse treatment through collaboration: Practice and research partnerships that work* (pp. 121–137). Washington, DC: American Psychological Association.
- Donovan, D. M. (2003c). Self-report assessment instruments. In B. A. Johnson, P. Ruiz, & M. Galanter (Eds.), *Handbook of clinical alcoholism treatment* (pp. 49–61). Baltimore: Lippincott/Williams & Wilkins.
- Donovan, D. M., & Chaney, E. F. (1985). Alcoholic relapse prevention and intervention: Models and methods. In G. A. Marlatt & J. R. Gordon (Eds.), *Relapse prevention: Maintenance strategies in the treatment of addictive behaviors* (pp. 351–416). New York: Guilford Press.
- Donovan, D. M., & Marlatt, G. A. (Eds.). (1988). *Assessment of addictive behaviors*. New York: Guilford Press.
- Donovan, D. M., & Marlatt, G. A. (1993). Behavioral treatment. In M. Galanter & H. Begleiter (Eds.), *Recent developments in alcoholism: Vol. 11. Ten years of progress* (pp. 397–411). New York: Plenum Press.

- Donovan, D. M., & Rosengren, D. B. (1999). Motivation for behavior change and treatment among substance abusers. In J. A. Tucker, D. M. Donovan & G. A. Marlatt (Eds.), *Changing addictive behavior: Bridging clinical and public health strategies* (pp. 127–159). New York: Guilford Press.
- Dowden, C., Antonowicz, D., & Andrews, D. A. (2003). The effectiveness of relapse prevention with offenders: A meta-analysis. *International Journal of Offender Therapy and Comparative Criminology*, 47(5), 516–528.
- Drake, R. E., Mueser, K. T., Brunette, M. F., & McHugo, G. J. (2004). A review of treatments for people with severe mental illnesses and co-occurring substance use disorders. *Psychiatric Rehabilitation Journal*, 27(4), 360–374.
- Driessen, M., Veltrup, C., Wetterling, T., John, U., & Dilling, H. (1998). Axis I and Axis II comorbidity in alcohol dependence and the two types of alcoholism. *Alcoholism: Clinical and Experimental Research*, 22(1), 77–86.
- Drobes, D. J., Meier, E. A., & Tiffany, S. T. (1994). Assessment of the effects of urges and negative affect on smokers' coping skills. *Behaviour Research and Therapy*, 32(1), 165–174.
- Drummond, D. C. (2000). What does cue-reactivity have to offer clinical research? *Addiction*, 95(Suppl.), S129–S144.
- Dunn, M. E., & Goldman, M. S. (1998). Age and drinking-related differences in the memory organization of alcohol expectancies in 3rd-, 6th-, 9th-, and 12th-grade children. *Journal of Consulting and Clinical Psychology*, 66(3), 579–585.
- Einstein, S. (1994). Relapse revisited: Failure by whom and what? *International Journal of the Addictions*, 29, 409–413.
- Eisen, S. A., Lin, N., Lyons, M. J., Scherrer, J. F., Griffith, K., True, W. R., Goldberg, J., & Tsuang, M. T. (1998). Familial influences on gambling behavior: An analysis of 3359 twin pairs. *Addiction*, 93(9), 1375–1384.
- Epstein, E. E., Labouvie, E., McCrady, B. S., Jensen, N. K., & Hayaki, J. (2002). A multi-site study of alcohol subtypes: Classification and overlap of unidimensional and multi-dimensional typologies. *Addiction*, 97(8), 1041–1053.
- Etter, J. F., Bergman, M. M., Humair, J. P., & Perneger, T. V. (2000). Development and validation of a scale measuring self-efficacy of current and former smokers. *Addiction*, 95(6), 613–625.
- Ewing, J. A. (1977). A biopsychosocial look at drinking and alcoholism. *Journal of the American College Health Association*, 25(3), 204–208.
- Ewing, J. A. (1980). Alcoholism—Another biopsychosocial disease. *Psychosomatics*, 21(5), 371–372.
- Feeney, G. F., Young, R. M., Connor, J. P., Tucker, J., & McPherson, A. (2002). Cognitive behavioural therapy combined with the relapse-prevention medication acamprosate: Are short-term treatment outcomes for alcohol dependence improved? *Australian and New Zealand Journal of Psychiatry*, 36(5), 622–628.
- Field, M., Mogg, K., & Bradley, B. P. (2004a). Cognitive bias and drug craving in recreational cannabis users. *Drug and Alcohol Dependence*, 74(1), 105–111.
- Field, M., Mogg, K., & Bradley, B. P. (2004b). Eye movements to smoking-related cues: Effects of nicotine deprivation. *Psychopharmacology*, 173(1–2), 116–123.
- Field, M., Mogg, K., Zettler, J., & Bradley, B. P. (2004). Attentional biases for alcohol cues in heavy and light social drinkers: the roles of initial orienting and maintained attention [Electronic version]. *Psychopharmacology*, 176(1), 88–93.
- Galizio, M., & Maisto, S. A. (1985). Toward a biopsychosocial theory of substance abuse. In M. Galizio & S. A. Maisto (Eds.), *Determinants of substance abuse: Bi-*

- ological, psychological and environmental factors* (pp. 425–429). New York: Plenum Press.
- Giannetti, V. J. (1993). Brief relapse prevention with substance abusers. In R. A. Wells & V. J. Giannetti (Eds.), *Casebook of the brief psychotherapies: Applied clinical psychology* (pp. 159–178). New York: Plenum Press.
- Glautier, S., & Drummond, D. C. (1994a). Alcohol dependence and cue reactivity. *Journal of Studies on Alcohol*, 55(2), 224–229.
- Glautier, S., & Drummond, D. C. (1994b). A conditioning approach to the analysis and treatment of drinking problems. *British Medical Bulletin*, 50(1), 186–199.
- Goldman, M. S. (1994). The alcohol expectancy concept: Applications to assessment, prevention, and treatment of alcohol abuse. *Applied and Preventive Psychology*, 3(3), 131–144.
- Goodman, A. (1990). Addiction: Definition and implications. *British Journal of Addiction*, 85(11), 1403–1408.
- Graham, K., Annis, H. M., Brett, P. J., & Venesoen, P. (1996). A controlled field trial of group versus individual cognitive-behavioural training for relapse prevention. *Addiction*, 91(8), 1127–1140.
- Grilo, C. M., & Shiffman, S. (1994). Longitudinal investigation of the abstinence violation effect in binge eaters. *Journal of Consulting and Clinical Psychology*, 62(3), 611–619.
- Grilo, C. M., Shiffman, S., & Wing, R. R. (1989). Relapse crises and coping among dieters. *Journal of Consulting and Clinical Psychology*, 57(4), 488–495.
- Grilo, C. M., Shiffman, S., & Wing, R. R. (1993). Coping with dietary relapse crises and their aftermath. *Addictive Behaviors*, 18(1), 89–102.
- Gustafson, R. (1992). The development of alcohol-related expectancies from the age of 12 to the age of 15 for two Swedish adolescent samples. *Alcoholism: Clinical and Experimental Research*, 16(4), 700–704.
- Gwaltney, C. J., Shiffman, S., Norman, G. J., Paty, J. A., Kassel, J. D., Gnys, M., Hickcox, M., Waters, A., & Balabanis, M. (2001). Does smoking abstinence self-efficacy vary across situations?: Identifying context-specificity within the Relapse Situation Efficacy Questionnaire. *Journal of Consulting and Clinical Psychology*, 69(3), 516–527.
- Gwaltney, C. J., Shiffman, S., Paty, J. A., Liu, K. S., Kassel, J. D., Gnys, M., & Hickcox, M. (2002). Using self-efficacy judgments to predict characteristics of lapses to smoking. *Journal of Consulting and Clinical Psychology*, 70(5), 1140–1149.
- Havassy, B. E., Alvidrez, J., & Owen, K. K. (2004). Comparisons of patients with comorbid psychiatric and substance use disorders: Implications for treatment and service delivery. *American Journal of Psychiatry*, 161(1), 139–145.
- Hayletta, S. A., Stephenson, G. M., & Lefevera, R. M. H. (2004). Covariation in addictive behaviours: A study of addictive orientations using the Shorter PROMIS Questionnaire. *Addictive Behaviors*, 29, 61–71.
- Heather, N., & Stallard, A. (1989). Does the Marlatt model underestimate the importance of conditioned craving in the relapse process? In M. Gossop (Ed.), *Relapse and addictive behaviour* (pp. 180–208). New York: Tavistock/Routledge.
- Heather, N., Stallard, A., & Tebbutt, J. (1991). Importance of substance cues in relapse among heroin users: Comparison of two methods of investigation. *Addictive Behaviors*, 16(1–2), 41–49.
- Henderson, M. J., & Galen, L. W. (2003). A classification of substance-dependent men on temperament and severity variables. *Addictive Behaviors*, 28(4), 741–760.

- Hill, E. M., Stoltenberg, S. F., Bullard, K. H., Li, S., Zucker, R. A., & Burmeister, M. (2002). Antisocial alcoholism and serotonin-related polymorphisms: Association tests. *Psychiatric Genetics*, *12*(3), 143–153.
- Hill, E. M., Stoltenberg, S. F., Burmeister, M., Closser, M., & Zucker, R. A. (1999). Potential associations among genetic markers in the serotonergic system and the antisocial alcoholism subtype. *Experimental and Clinical Psychopharmacology*, *7*(2), 103–121.
- Hodgins, D. C., & el-Guebaly, N. (2004). Retrospective and prospective reports of precipitants to relapse in pathological gambling. *Journal of Consulting and Clinical Psychology*, *72*(1), 72–80.
- Hodgins, D. C., el-Guebaly, N., & Armstrong, S. (1995). Prospective and retrospective reports of mood states before relapse to substance use. *Journal of Consulting and Clinical Psychology*, *63*(3), 400–407.
- Holahan, C. J., Moos, R. H., Holahan, C. K., Cronkite, R. C., & Randall, P. K. (2001). Drinking to cope, emotional distress and alcohol use and abuse: A ten-year model. *Journal of Studies on Alcohol*, *62*(2), 190–198.
- Hudson, S. M., Ward, T., & Marshall, W. L. (1992). The abstinence violation effect in sex offenders: A reformulation. *Behaviour Research and Therapy*, *30*(5), 435–441.
- Hufford, M. R., Witkiewitz, K., Shields, A. L., Kodya, S., & Caruso, J. C. (2003). Relapse as a nonlinear dynamic system: Application to patients with alcohol use disorders. *Journal of Abnormal Psychology*, *112*(2), 219–227.
- Hunt, W., Barnett, L., & Branch, L. (1971). Relapse rates in addiction programs. *Journal of Clinical Psychology*, *27*(4), 455–456.
- Irvin, J. E., Bowers, C. A., Dunn, M. E., & Wang, M. C. (1999). Efficacy of relapse prevention: A meta-analytic review. *Journal of Consulting and Clinical Psychology*, *67*(4), 563–570.
- Isenhardt, C. E. (1991). Factor structure of the Inventory of Drinking Situations. *Journal of Substance Abuse*, *3*(1), 59–71.
- Isenhardt, C. E. (1993). Psychometric evaluation of a short form of the inventory of drinking situations. *Journal of Studies on Alcohol*, *54*(3), 345–349.
- Johnson, B. A., Ait-Daoud, N., Ma, J. Z., & Wang, Y. (2003). Ondansetron reduces mood disturbance among biologically predisposed, alcohol-dependent individuals. *Alcoholism: Clinical and Experimental Research*, *27*(11), 1773–1779.
- Johnson, B. A., Roache, J. D., Ait-Daoud, N., Zanca, N. A., & Velazquez, M. (2002). Ondansetron reduces the craving of biologically predisposed alcoholics. *Psychopharmacology*, *160*(4), 408–413.
- Johnson, B. A., Roache, J. D., Javors, M. A., DiClemente, C. C., Cloninger, C. R., Prihoda, T. J., Bordnick, P. S., Ait-Daoud, N., & Hensler, J. (2000). Ondansetron for reduction of drinking among biologically predisposed alcoholic patients: A randomized controlled trial. *Journal of the American Medical Association*, *284*(8), 963–971.
- Kadden, R. M. (1995). Cognitive-behavioral approaches to alcoholism treatment. *Alcohol Health and Research World*, *18*(4), 279–286.
- Kadden, R. M. (1999). Cognitive behavior therapy. In P. J. Ott & R. E. Tarter (Eds.), *Sourcebook on substance abuse: Etiology, epidemiology, assessment, and treatment* (pp. 272–283). Boston: Allyn and Bacon.
- Kilbey, M. M., Downey, K., & Breslau, N. (1998). Predicting the emergence and persistence of alcohol dependence in young adults: The role of expectancy and other risk factors. *Experimental and Clinical Psychopharmacology*, *6*(2), 149–156.

- Kranzler, H. R., Bursleson, J. A., Brown, J., & Babor, T. F. (1996). Fluoxetine treatment seems to reduce the beneficial effects of cognitive-behavioral therapy in Type B alcoholics. *Alcoholism: Clinical and Experimental Research*, 20(9), 1534–1541.
- Kranzler, H. R., & Rosenthal, R. N. (2003). Dual diagnosis: Alcoholism and co-morbid psychiatric disorders. *American Journal of Addictions*, 12(Suppl. 1), S26–S40.
- Lamb, S., Greenlick, M. R., & McCarty, D. (Eds.). (1998). *Bridging the gap between practice and research: Forging partnerships with community-based drug and alcohol treatment*. Washington, DC: National Academy Press.
- Langbehn, D. R., Cadoret, R. J., Caspers, K., Troughton, E. P., & Yucuis, R. (2003). Genetic and environmental risk factors for the onset of drug use and problems in adoptees. *Drug and Alcohol Dependence*, 69(2), 151–167.
- Langenbucher, J., Sulesund, D., Chung, T., & Morgenstern, J. (1996). Illness severity and self-efficacy as course predictors of DSM-IV alcohol dependence in a multisite clinical sample. *Addictive Behaviors*, 21(5), 543–553.
- Larimer, M. E., & Marlatt, G. A. (1990). Applications of relapse prevention with moderation goals. *Journal of Psychoactive Drugs*, 22(2), 189–195.
- Larimer, M. E., Palmer, R. S., & Marlatt, G. A. (1999). Relapse prevention: An overview of Marlatt's cognitive-behavioral model. *Alcohol Research and Health*, 23(2), 151–160.
- Laudet, A., Magura, S., Vogel, H. S., & Knight, E. (2000). Recovery challenges among dually diagnosed individuals. *Journal of Substance Abuse Treatment*, 18(4), 321–329.
- Lehman, A. F., Myers, C. P., Thompson, J. W., & Corty, E. (1993). Implications of mental and substance use disorders: A comparison of single and dual diagnosis patients. *Journal of Nervous and Mental Disease*, 181(6), 365–370.
- Lesieur, H. R., & Blume, S. B. (1993). Pathological gambling, eating disorders, and the psychoactive substance use disorders. *Journal of Addictive Diseases*, 12(3), 89–102.
- Limosin, F., Loze, J. Y., Rouillon, F., Ades, J., & Gorwood, P. (2003). Association between dopamine receptor D1 gene DdeI polymorphism and sensation seeking in alcohol-dependent men. *Alcoholism: Clinical and Experimental Research*, 27(8), 1226–1228.
- Litman, G. K. (1986). Alcohol survival: The prevention of relapse. In W. R. Miller & N. Heather (Eds.), *Treating addictive disorders: Processes of change* (pp. 391–405). New York: Plenum Press.
- Litman, G. K., Stapleton, J., Oppenheim, A. N., Peleg, M., & Jackson, P. (1983). Situations related to alcoholism relapse. *British Journal of Addiction*, 78(4), 381–389.
- Litman, G. K., Stapleton, J., Oppenheim, A. N., Peleg, M., & Jackson, P. (1984). Relationship between coping behaviours, their effectiveness and alcoholism relapse and survival. *British Journal of Addiction*, 79(3), 283–291.
- Litt, M. D., Babor, T. F., DelBoca, F. K., Kadden, R. M., & Cooney, N. L. (1992). Types of alcoholics: II. Application of an empirically derived typology to treatment matching. *Archives of General Psychiatry*, 49(8), 609–614.
- Litt, M. D., Cooney, N. L., & Morse, P. (2000). Reactivity to alcohol-related stimuli in the laboratory and in the field: Predictors of craving in treated alcoholics. *Addiction*, 95(6), 889–900.
- Llorente, J. M., Fernandez, C., & Gutierrez, M. (2000). Prediction of relapse among

- heroin users treated in Spanish therapeutic communities: A comparison of different models. *Substance Use and Misuse*, 35(11), 1537–1550.
- Longabaugh, R. (2003). Involvement of support networks in treatment. *Recent Developments in Alcoholism*, 16, 1332–1147.
- Longabaugh, R., Rubin, A., Stout, R. L., Zywiak, W. H., & Lowman, C. (1996). The reliability of Marlatt's taxonomy for classifying relapses. *Addiction*, 91(Suppl. 12), S73–S88.
- Lowman, C., Allen, J., & Stout, R. L. (1996). Replication and extension of Marlatt's taxonomy of relapse precipitants: Overview of procedures and results (Relapse Research Group). *Addiction*, 91(Suppl. 12), S51–S71.
- Maisto, S. A., Pollock, N. K., Cornelius, J. R., Lynch, K. G., & Martin, C. S. (2003). Alcohol relapse as a function of relapse definition in a clinical sample of adolescents. *Addictive Behaviors*, 28(3), 449–459.
- Marks, I. (1990). Behavioural (non-chemical) addictions. *British Journal of Addiction*, 85(11), 1389–1394.
- Marlatt, G. A. (1990). Cue exposure and relapse prevention in the treatment of addictive behaviors. *Addictive Behaviors*, 15(4), 395–399.
- Marlatt, G. A. (1996a). Lest taxonomy become taxidermy: A comment on the relapse replication and extension project. *Addiction*, 91(Suppl. 12), S147–S153.
- Marlatt, G. A. (1996b). Taxonomy of high-risk situations for alcohol relapse: Evolution and development of a cognitive-behavioral model. *Addiction*, 91(Suppl. 12), S37–S49.
- Marlatt, G. A., & Donovan, D. M. (1981). Alcoholism and drug dependence: Cognitive social learning factors in addictive behaviors. In E. W. Craighead, A. E. Kazdin, & M. J. Mahoney (Eds.), *Behavior modification: Principles, issues, and applications* (2nd ed., pp. 264–285). Boston: Houghton Mifflin.
- Marlatt, G. A., & Donovan, D. M. (Eds.). (2005). *Relapse prevention* (2nd ed.). New York: Guilford Press.
- Marlatt, G. A., & George, W. H. (1984). Relapse prevention: Introduction and overview of the model. *British Journal of Addiction*, 79(3), 261–273.
- Marlatt, G. A., & Gordon, J. R. (1980). Determinants of relapse: Implications for the maintenance of behavior change. In P. O. Davidson & S. M. Davidson (Eds.), *Behavioral medicine: Changing health lifestyles* (pp. 1410–1452). New York: Brunner/Mazel.
- Marlatt, G. A., & Gordon, J. R. (Eds.). (1985). *Relapse prevention: Maintenance strategies in the treatment of addictive behaviors*. New York: Guilford Press.
- Marlatt, G. A., & Witkiewitz, K. (2002). Harm reduction approaches to alcohol use: Health promotion, prevention, and treatment. *Addictive Behaviors*, 27(6), 867–886.
- Martin, G. W., Pollock, N. K., Cornelius, J. R., Lynch, K. G., & Martin, C. S. (1995). The Drug Avoidance Self-Efficacy Scale. *Journal of Substance Abuse*, 7(2), 151–163.
- McCrary, B. S. (1993). Relapse prevention: A couples-therapy perspective. In T. J. O'Farrell (Ed.), *Treating alcohol problems: Marital and family interventions* (pp. 165–182). New York: Guilford Press.
- McCrary, B. S. (2000). Alcohol use disorders and the Division 12 Task Force of the American Psychological Association. *Psychology of Addictive Behaviors*, 14(3), 267–276.
- McKay, J. R. (1999). Studies of factors in relapse to alcohol, drug and nicotine use: A

- critical review of methodologies and findings. *Journal of Studies on Alcohol*, 60(4), 566–576.
- McKay, J. R., Merikle, E., Mulvaney, F. D., Weiss, R. V., & Koppenhaver, J. M. (2001). Factors accounting for cocaine use two years following initiation of continuing care. *Addiction*, 96(2), 213–225.
- McKay, J. R., O'Farrell, T. J., Maisto, S. A., Connors, G. J., & Funder, D. C. (1989). Biases in relapse attributions made by alcoholics and their wives. *Addictive Behaviors*, 14(5), 513–522.
- McKay, J. R., Rutherford, M. J., & Alterman, A. I. (1996). An investigation of potential time effects in retrospective reports of cocaine relapses. *Addictive Behaviors*, 21(1), 37–46.
- Merikangas, K. R., Stolar, M., Stevens, D. E., Goulet, J., Preisig, M. A., Fenton, B., Zhang, H., O'Malley, S. S., & Rounsaville, B. J. (1998). Familial transmission of substance use disorders. *Archives of General Psychiatry*, 55(11), 973–979.
- Meyer, R. E., & Babor, T. F. (1989). Explanatory models of alcoholism. In A. Tasman, R. E. Hales, & A. J. Frances (Eds.), *American Psychiatric Press review of psychiatry* (Vol. 8, pp. 273–292). Washington, DC: American Psychiatric Press.
- Miller, P. M., Smith, G. T., & Goldman, M. S. (1990). Emergence of alcohol expectancies in childhood: A possible critical period. *Journal of Studies on Alcohol*, 51(4), 343–349.
- Miller, W. R. (1996). What is a relapse?: Fifty ways to leave the wagon. *Addiction*, 91(Suppl. 12), S15–S27.
- Miller, W. R., Westerberg, V. S., Harris, R. J., & Tonigan, J. S. (1996). What predicts relapse?: Prospective testing of antecedent models. *Addiction*, 91(Suppl. 12), S155–S172.
- Miller, W. R., & Wilbourne, P. L. (2002). Mesa Grande: A methodological analysis of clinical trials of treatments for alcohol use disorders. *Addiction*, 97(3), 265–277.
- Moggi, F., Ouimette, P. C., Moos, R. H., & Finney, J. W. (1999). Dual diagnosis patients in substance abuse treatment: Relationship of general coping and substance-specific coping to 1-year outcomes. *Addiction*, 94(12), 1805–1816.
- Mokdad, A. H., Marks, J. S., Stroup, D. F., & Gerberding, J. L. (2004). Actual causes of death in the United States, 2000. *Journal of the American Medical Association*, 291(10), 1238–1245.
- Monti, P. M., Abrams, D. B., Kadden, R. M., & Cooney, N. L. (1989). *Treating alcohol dependence: A coping skills training guide*. New York: Guilford Press.
- Monti, P. M., Gulliver, S. B., & Myers, M. G. (1994). Social skills training for alcoholics: Assessment and treatment. *Alcohol and Alcoholism*, 29(6), 627–637.
- Monti, P. M., & O'Leary, T. A. (1999). Coping and social skills training for alcohol and cocaine dependence. *Psychiatric Clinics of North America*, 22(2), 447–470.
- Monti, P. M., Rohsenow, D. J., Abrams, D. B., Zwick, W. R., Binkoff, J. A., Munroe, S. M., Fingeret, A. L., Nirenberg, T. D., Liepman, M. R., Pedraza, M., Kadden, R. M., & Cooney, N. L. (1993). Development of a behavior analytically derived alcohol-specific role-play assessment instrument. *Journal of Studies on Alcohol*, 54(6), 710–721.
- Monti, P. M., Rohsenow, D. J., Colby, S. M., & Abrams, D. B. (1995). Coping and social skills training. In R. K. Hester & W. R. Miller (Eds.), *Handbook of alcoholism treatment approaches: Effective alternatives* (2nd ed., pp. 221–241). Boston: Allyn & Bacon.
- Monti, P. M., Rohsenow, D. J., & Hutchison, K. E. (2000). Toward bridging the gap

- between biological, psychobiological and psychosocial models of alcohol craving. *Addiction*, 95(Suppl.), S229–S236.
- Monti, P. M., Rohsenow, D. J., Swift, R. M., Gulliver, S. B., Colby, S. M., Mueller, T. I., Brown, R. A., Gordon, A., Abrams, D. B., Niaura, R. S., & Asher, M. K. (2001). Naltrexone and cue exposure with coping and communication skills training for alcoholics: Treatment process and 1-year outcomes. *Alcoholism: Clinical and Experimental Research*, 25(11), 1634–1647.
- Mooney, J. P., Burling, T. A., Hartman, W. M., & Brenner-Liss, D. (1992). The abstinence violation effect and very low calorie diet success. *Addictive Behaviors*, 17(4), 319–324.
- Moos, R. H. (2003). Addictive disorders in context: Principles and puzzles of effective treatment and recovery. *Psychology of Addictive Behaviors*, 17(1), 3–12.
- Moos, R. H., & Holahan, C. J. (2003). Dispositional and contextual perspectives on coping: Toward an integrative framework. *Journal of Clinical Psychology*, 59(12), 1387–1403.
- Moser, A. E., & Annis, H. M. (1996). The role of coping in relapse crisis outcome: A prospective study of treated alcoholics. *Addiction*, 91(8), 1101–1114.
- Mulder, R. T. (2002). Alcoholism and personality. *Australian and New Zealand Journal of Psychiatry*, 36(1), 44–52.
- Mundt, J. C., Bohn, M. J., King, M., & Hartley, M. T. (2002). Automating standard alcohol use assessment instruments via interactive voice response technology. *Alcohol: Clinical and Experimental Research*, 26(2), 207–211.
- Mundt, J. C., Perrine, M. W., & Searles, J. S. (1997). Individual differences in alcohol responsivity: Physiological, psychomotor and subjective response domains. *Journal of Studies on Alcohol*, 58(2), 130–140.
- Myers, M. G., & Brown, S. A. (1990). Coping responses and relapse among adolescent substance abusers. *Journal of Substance Abuse*, 2(2), 177–189.
- Niaura, R. (2000). Cognitive social learning and related perspectives on drug craving. *Addiction*, 95(Suppl.), S155–S163.
- Noble, E. P. (1998). The D2 dopamine receptor gene: A review of association studies in alcoholism and phenotypes. *Alcohol*, 16(1), 33–45.
- Noone, M., Dua, J., & Markham, R. (1999). Stress, cognitive factors, and coping resources as predictors of relapse in alcoholics. *Addictive Behaviors*, 24(5), 687–693.
- O'Brien, C. P., Childress, A. R., Ehrman, R., & Robbins, S. J. (1998). Conditioning factors in drug abuse: Can they explain compulsion? *Journal of Psychopharmacology*, 12(1), 15–22.
- O'Connell, K. A., Gerkovich, M. M., Cook, M. R., Shiffman, S., Hickcox, M., & Kakolewski, K. E. (1998). Coping in real time: Using Ecological Momentary Assessment techniques to assess coping with the urge to smoke. *Research Nursing and Health*, 21(6), 487–497.
- Oei, T. P. S., & Baldwin, A. R. (1994). Expectancy theory: A two-process model of alcohol use and abuse. *Journal of Studies on Alcohol*, 55(5), 525–534.
- O'Malley, S. S., Jaffe, A. J., Chang, G., Schottenfeld, R. S., Meyer, R. E., & Rounsaville, B. (1992). Naltrexone and coping skills therapy for alcohol dependence: A controlled study. *Archives of General Psychiatry*, 49(11), 881–887.
- Palfai, T. P., & Ostafin, B. D. (2003). The influence of alcohol on the activation of outcome expectancies: The role of evaluative expectancy activation in drinking behavior. *Journal of Studies on Alcohol*, 64(1), 111–119.

- Patkar, A. A., Thornton, C. C., Mannelli, P., Hill, K. P., Gottheil, E., Vergare, M. J., & Weinstein, S. P. (2004). Comparison of pretreatment characteristics and treatment outcomes for alcohol-, cocaine-, and multisubstance-dependent patients. *Journal of Addictive Diseases, 23*(1), 93–109.
- Pattison, E. M. (1980). Bio-psycho-social analysis of alcohol and drug abuse: Implications for social policy. In *Man, drugs, and society—Current perspectives, Proceedings of the First Pan-Pacific Conference on Drugs and Alcohol* (pp. 66–80). Canberra, Australia: Australian Foundation for Alcohol and Drug Dependence.
- Pettinati, H. M., Volpicelli, J. R., Kranzler, H. R., Luck, G., Rukstalis, M. R., & Cnaan, A. (2000). Sertraline treatment for alcohol dependence: Interactive effects of medication and alcoholic subtype. *Alcoholism: Clinical and Experimental Research, 24*(10), 1597–1601.
- Prochaska, J. O., DiClemente, C. C., & Norcross, J. C. (1992). In search of how people change: Applications to addictive behaviors. *American Psychologist, 47*, 1102–1114.
- Rather, B. C., & Goldman, M. S. (1994). Drinking-related differences in the memory organization of alcohol expectancies. *Experimental and Clinical Psychopharmacology, 2*(3), 167–183.
- Read, M. R., Penick, E. C., Powell, B. J., Nickel, E. J., Bingham, S. F., & Campbell, J. (1990). Subtyping male alcoholics by family history of alcohol abuse and co-occurring psychiatric disorder: A bi-dimensional model. *British Journal of Addiction, 85*(3), 367–378.
- Rohsenow, D. J., Monti, P. M., Martin, R. A., Colby, S. M., Myers, M. G., Gulliver, S. B., Brown, R. A., Mueller, T. I., Gordon, A., & Abrams, D. B. (2004). Motivational enhancement and coping skills training for cocaine abusers: Effects on substance use outcomes. *Addiction, 99*(7), 862–874.
- Rohsenow, D. J., Niaura, R. S., Childress, A. R., Abrams, D. B., & Monti, P. M. (1990–1991). Cue reactivity in addictive behaviors: Theoretical and treatment implications. *International Journal of Addictions, 25*(7A–8A), 957–993.
- Ross, S. M., Miller, P. J., Emmerson, R. Y., & Todt, E. H. (1988–1989). Self-efficacy, standards, and abstinence violation: A comparison between newly sober and long-term sober alcoholics. *Journal of Substance Abuse, 1*(2), 221–229.
- Rotgers, F. (2002). Clinically useful, research validated assessment of persons with alcohol problems. *Behaviour Research and Therapy, 40*(12), 1425–1441.
- Sale, E., Sambrano, S., Springer, J. F., & Turner, C. W. (2003). Risk, protection, and substance use in adolescents: A multi-site model. *Journal of Drug Education, 33*(1), 91–105.
- Saunders, B., & Allsop, S. (1987). Relapse: A psychological perspective. *British Journal of Addiction, 82*(4), 417–429.
- Saunders, B., & Allsop, S. (1989). Relapse: A critique. In M. Gossop (Ed.), *Relapse and addictive behaviour* (pp. 249–277). London: Routledge.
- Schmitz, J. M., Rosenfarb, I. S., & Payne, T. J. (1993). Cognitive and affective responses to successful coping during smoking cessation. *Journal of Substance Abuse, 5*(1), 61–72.
- Schmitz, J. M., Stotts, A. L., Rhoades, H. M., & Grabowski, J. (2001). Naltrexone and relapse prevention treatment for cocaine-dependent patients. *Addictive Behaviors, 26*(2), 167–180.
- Schneider, J. P., & Irons, R. R. (2001). Assessment and treatment of addictive sexual

- disorders: Relevance for chemical dependency relapse. *Substance Use and Misuse*, 36(13), 1795–1820.
- Schuckit, M. A. (1994). Low level of response to alcohol as a predictor of future alcoholism. *American Journal of Psychiatry*, 151(2), 184–189.
- Schuckit, M. A. (1998). Biological, psychological and environmental predictors of the alcoholism risk: A longitudinal study. *Journal of Studies on Alcohol*, 59(5), 485–494.
- Schuckit, M. A., Edenberg, H. J., Kalmijn, J., Flury, L., Smith, T. L., Reich, T., Bierut, L., Goate, A., & Foroud, T. (2001). A genome-wide search for genes that relate to a low level of response to alcohol. *Alcoholism: Clinical and Experimental Research*, 25(3), 323–329.
- Schuckit, M. A., Smith, T. L., Kalmijn, J., Tsuang, J., Hesselbrock, V., & Bucholz, K. (2000). Response to alcohol in daughters of alcoholics: A pilot study and a comparison with sons of alcoholics. *Alcohol and Alcoholism*, 35(3), 242–248.
- Schwartz, J. E., Neale, J., Marco, C., Shiffman, S. S., & Stone, A. A. (1999). Does trait coping exist?: A momentary assessment approach to the evaluation of traits. *Journal of Personality and Social Psychology*, 77(2), 360–369.
- Shaffer, H. J. (1997). The most important unresolved issue in the addictions: Conceptual chaos. *Substance Use and Misuse*, 32(11), 1573–1580.
- Shiffman, S. (1987). Maintenance and relapse: Coping with temptation. In T. D. Nirenberg & S. A. Maisto (Eds.), *Developments in the assessment and treatment of addictive behaviors* (pp. 353–385). Norwood, NJ: Ablex.
- Shiffman, S. (1989). Conceptual issues in the study of relapse. In M. Gossop (Ed.), *Relapse and addictive behaviour* (pp. 149–179). London: Tavistock/Routledge.
- Shiffman, S., Balabanis, M. H., Paty, J. A., Engberg, J., Gwaltney, C. J., Liu, K. S., Gnys, M., Hickcox, M., & Paton, S. M. (2000). Dynamic effects of self-efficacy on smoking lapse and relapse. *Health Psychology*, 19(4), 315–323.
- Shiffman, S., Hickcox, M., Paty, J. A., Gnys, M., Kassel, J. D., & Richards, T. J. (1996). Progression from a smoking lapse to relapse: Prediction from abstinence violation effects, nicotine dependence, and lapse characteristics. *Journal of Consulting and Clinical Psychology*, 64(5), 993–1002.
- Shiffman, S., Hufford, M., Hickcox, M., Paty, J. A., Gnys, M., & Kassel, J. D. (1997). Remember that?: A comparison of real-time versus retrospective recall of smoking lapses. *Journal of Consulting and Clinical Psychology*, 65(2), 292–300.
- Shiffman, S., Paty, J. A., Gnys, M., Kassel, J. A., & Hickcox, M. (1996). First lapses to smoking: Within-subjects analysis of real-time reports. *Journal of Consulting and Clinical Psychology*, 64, 366–379.
- Shiffman, S., & Wills, T. A. (Eds.). (1985). *Coping and substance use*. Orlando, FL: Academic Press.
- Siegler, M., Osmond, H., & Newell, S. (1968). Models of alcoholism. *Quarterly Journal of Studies on Alcohol*, 29, 571–591.
- Sklar, S. M., Annis, H. M., & Turner, N. E. (1997). Development and validation of the Drug-Taking Confidence Questionnaire: A measure of coping self-efficacy. *Addictive Behaviors*, 22(5), 655–670.
- Smith, D. E., & Seymour, R. B. (2004). The nature of addiction. In R. H. Coombs (Ed.), *Handbook of addictive behaviors: A practical guide to diagnosis and treatment* (pp. 3–30). New York: Wiley.
- Sobell, L. C., Toneatto, T., & Sobell, M. B. (1994). Behavioral assessment and treat-

- ment planning for alcohol, tobacco, and other drug problems: Current status with an emphasis on clinical applications. *Behavior Therapy*, 25(4), 533–580.
- Spittle, B. J. (1982). Alcohol use in New Zealand: A review from a biopsychosocial perspective. *New Zealand Medical Journal*, 95(7), 222–225.
- Stacy, A. W. (1997). Memory activation and expectancy as prospective predictors of alcohol and marijuana use. *Journal of Abnormal Psychology*, 106(1), 61–73.
- Stacy, A. W., Leigh, B. C., & Weingardt, K. R. (1994). Memory accessibility and association of alcohol use and its positive outcomes. *Experimental and Clinical Psychopharmacology*, 2(3), 2690–2282.
- Stacy, A. W., Newcomb, M. D., & Bentler, P. M. (1995). Expectancy in mediational models of cocaine use. *Personality and Individual Differences*, 19(5), 655–667.
- Stephens, R. S., Curtin, L., Simpson, E. E., & Roffman, R. A. (1994). Testing the abstinence violation effect construct with marijuana cessation. *Addictive Behaviors*, 19(1), 23–32.
- Stoffelmayr, B., Wadland, W. C., & Pan, W. (2003). An examination of the process of relapse prevention therapy designed to aid smoking cessation. *Addictive Behaviors*, 28(7), 1351–1358.
- Stone, A. A., Schwartz, J. E., Neale, J. M., Shiffman, S., Marco, C. A., Hickcox, M., Paty, J., Porter, L. S., & Cruise, L. J. (1998). A comparison of coping assessed by ecological momentary assessment and retrospective recall. *Journal of Personality and Social Psychology*, 74(6), 1670–1680.
- Stout, R. L., Longabaugh, R., & Rubin, A. (1996). Predictive validity of Marlatt's relapse taxonomy versus a more general relapse code. *Addiction*, 91(Suppl. 12), S99–S110.
- Stout, R. L., Rubin, A., Zwick, W., Zywiak, W., & Bellino, L. (1999). Optimizing the cost-effectiveness of alcohol treatment: A rationale for extended case monitoring. *Addictive Behaviors*, 24(1), 17–35.
- Tapert, S. F., Ozyurt, S. S., Myers, M. G., & Brown, S. A. (2004). Neurocognitive ability in adults coping with alcohol and drug relapse temptations. *American Journal of Drug and Alcohol Abuse*, 30(2), 445–460.
- Tucker, J. A., Donovan, D. M., & Marlatt, G. A. (Eds.). (1999). *Changing addictive behavior: Bridging clinical and public health strategies*. New York: Guilford Press.
- Vielva, I., & Iraurgi, I. (2001). Cognitive and behavioural factors as predictors of abstinence following treatment for alcohol dependence. *Addiction*, 96(2), 297–303.
- Wallace, J. (1989). Biopsychosocial model of alcoholism. *Social Casework*, 70, 325–332.
- Wallace, J. (1993). Modern disease models of alcoholism and other chemical dependencies: The new biopsychosocial models. *Drugs and Society*, 8, 69–87.
- Walton, M. A., Castro, F. G., & Barrington, E. H. (1994). The role of attributions in abstinence, lapse, and relapse following substance abuse treatment. *Addictive Behaviors*, 19(3), 319–331.
- Wang, S. J., Winchell, C. J., McCormick, C. G., Nevius, S. E., & O'Neill, R. T. (2002). Short of complete abstinence: An analysis exploration of multiple drinking episodes in alcoholism treatment trials. *Alcohol: Clinical and Experimental Research*, 26(12), 1803–1809.
- Ward, T., Hudson, S. M., & Bulik, C. M. (1993). The abstinence violation effect in bulimia nervosa. *Addictive Behaviors*, 18(6), 671–680.

- Waters, A. J., Shiffman, S., Bradley, B. P., & Mogg, K. (2003). Attentional shifts to smoking cues in smokers. *Addiction, 98*(10), 1409–1417.
- Waters, A. J., Shiffman, S., Sayette, M. A., Paty, J. A., Gwaltney, C. J., & Balabanis, M. H. (2003). Attentional bias predicts outcome in smoking cessation. *Health Psychology, 22*(4), 378–387.
- Watkins, K. E., Burnam, A., Kung, F. Y., & Paddock, S. (2001). A national survey of care for persons with co-occurring mental and substance use disorders. *Psychiatric Services, 52*(8), 1062–1068.
- Weingardt, K. R., Stacy, A. W., & Leigh, B. C. (1996). Automatic activation of alcohol concepts in response to positive outcomes of alcohol use. *Alcoholism: Clinical and Experimental Research, 20*(1), 25–30.
- Weiss, R. D., Najavits, L. M., & Greenfield, S. F. (1999). A relapse prevention group for patients with bipolar and substance use disorders. *Journal of Substance Abuse Treatment, 16*(1), 47–54.
- Wilhelmsen, K. C., Schuckit, M., Smith, T. L., Lee, J. V., Segall, S. K., Feiler, H. S., & Kalmijn, J. (2003). The search for genes related to a low-level response to alcohol determined by alcohol challenges. *Alcoholism: Clinical and Experimental Research, 27*(7), 1041–1047.
- Wilson, P. H. (1992). Relapse prevention: Conceptual and methodological issues. In P. H. Wilson (Ed.), *Principles and practice of relapse prevention* (pp. 1–22). New York: Guilford Press.
- Witkiewitz, K., & Marlatt, G. A. (2004). Relapse prevention for alcohol and drug problems: That was Zen, this is Tao. *American Psychologist, 59*(4), 224–235.
- Zucker, R. A., & Gomberg, E. S. (1986). Etiology of alcoholism reconsidered: The case for a biopsychosocial process. *American Psychologist, 41*, 783–793.
- Zweben, A., & Cisler, R. A. (2003). Clinical and methodological utility of a composite outcome measure for alcohol treatment research. *Alcohol: Clinical and Experimental Research, 27*(10), 1680–1685.
- Zywiak, W. H., Connors, G. J., Maisto, S. A., & Westerberg, V. S. (1996). Relapse research and the Reasons for Drinking Questionnaire: A factor analysis of Marlatt's relapse taxonomy. *Addiction, 91*(Suppl. 12), S121–S130.
- Zywiak, W. H., Stout, R. L., Connors, G. J., Maisto, S. A., Longabaugh, R., & Dyck, I. S. (2001). *Factor analysis and predictive validity of the Relapse Questionnaire in Project MATCH*. Paper presented in a symposium, New Perspectives on Relapse and Treatment Outcome, Annual Meeting of the Research Society on Alcoholism, Montreal, Quebec, Canada.
- Zywiak, W. H., Westerberg, V. S., Connors, G. J., & Maisto, S. A. (2003). Exploratory findings from the Reasons for Drinking Questionnaire. *Journal of Substance Abuse Treatment, 25*(4), 287–292.