Chapter 6
Brief Motivational Interventions to Change Problematic Substance Use

Mark A. Ilgen and Joseph E. Glass

The misuse of alcohol and drugs represents a common and costly problem within the USA and around the world (SAMHSA, 2010; World Health Organization, 2010). Given the substantial prevalence of substance use disorders, social workers are likely to encounter a large number of patients with substance-related problems regardless of the setting in which they work. Clearly, social workers working within addictions treatment programs will see large numbers of patients with substance-related problems. However, even outside of specialty substance use disorder treatment settings, social workers frequently encounter clients who are struggling with problems related to the use of alcohol or drugs. Social workers employed in general mental health settings report that approximately one fifth of clients in their caseloads carry a DSM-IV diagnosis of a substance use disorder (Smith, Whitaker, & Weismiller, 2006). Brief motivational interventions provide a framework for treatment providers to intervene to reduce substance misuse. Below, we briefly review the data on the prevalence of substance use/misuse, describe the role of motivation in shaping behavior, and describe the existing evidence supporting the efficacy of brief motivational interventions. Given emerging evidence that brief motivational interventions can be effective even when delivered in non-specialty settings, such as primary care, social workers in all treatment settings have the opportunity to assess for and address problematic substance use in their patients.

M.A. Ilgen (✉)
Department of Veterans Affairs Healthcare System,
VA Serious Mental Illness Treatment Research and Evaluation Center,
Ann Arbor, MI, USA

Department of Psychiatry, University of Michigan, Ann Arbor, MI, USA
e-mail: marki@med.umich.edu

J.E. Glass
School of Social Work, University of Wisconsin-Madison,
1350 University Ave., Madison, WI 53706, USA
e-mail: jeglass@wustl.edu

M.G. Vaughn and B.E. Perron (eds.), *Social Work Practice in the Addictions*,
Contemporary Social Work Practice, DOI 10.1007/978-1-4614-5357-4_6,

Prevalence

The use of alcohol and drug use is very common in the USA and around the world (SAMHSA, 2010; World Health Organization, 2010). Based on the data from the 2006 National Survey on Drug Use and Health, 23% of U.S. residents engaged in at-risk drinking in the last year, with an estimated 7.6% of the population of the USA meeting criteria for a diagnosable alcohol use disorder (AUD) (SAMHSA, 2007). It was also estimated that 20.2 million individuals over the age of 12 had used an illicit drug in the past month, which amounts to approximately 8.2% of the U.S. population. About half of those who used illicit drugs used cannabis. Further, 35.2 million individuals over the age of 12 had used cocaine in their lifetime (8.6 million using crack cocaine) and just over 6 million used cocaine in the past year (SAMHSA, 2007). The rates of substance use disorders are higher in certain clinical settings such as locations that provide emergency treatment to traditionally underserved or impoverished patients (Booth et al., 2011). Given the high prevalence of alcohol and drug use, it is not surprising that social work practitioners frequently encounter clients with active substance use disorders in their clinical practice (Smith et al., 2006).

Consequences

The problems related to the use of alcohol and illicit substances are highly relevant to the diverse populations that social workers serve. Consuming alcohol above recommended limits is associated with an increased risk of acute injury, psychosocial problems, chronic and acute medical problems, and terminal illness (Center for Disease Control and Prevention, 2009; National Institute on Alcohol Abuse and Alcoholism, 2005). Persons with substance use disorders report strained social relationships and negative perceptions from others in their social network (Midanik & Greenfield, 2000). Many families are familiar with the devastating effects of alcohol; one-quarter of all children under 18 years of age live in a household with someone who is alcohol dependent (Grant, 2000), and over one half of all adults have a family member who has had problems with alcohol (Dawson & Grant, 1998). Additionally, substance use disorders appear to have more deleterious effects for racial/ethnic minorities and women. The social consequences of alcohol are worse for African American and Hispanics as compared to whites, which may be attributed to harsher experiences of alcohol-related stigma among some racial and ethnic minorities (Mulia, Ye, Greenfield, & Zemore, 2009; Smith, Dawson, Goldstein, & Grant, 2010). Women who consume alcohol at unhealthy levels experience more psychosocial and medical problems as compared to men (Bradley et al., 2001). Those who are dependent on alcohol or drugs are subject to being devalued by their peers and experience discrimination. The public stigma towards those with alcohol and drug used disorders is even worse than the stigma towards those with schizophrenia or depression partially because those with substance use disorders are

perceived as more violent and more at fault for their illness (Schomerus et al., 2011). Given the profession's spotlight on social justice, social workers are in a unique position to offer help to those who experience alcohol and drug problems.

Few of Those with Substance Use Disorders Receive Treatment

Despite the substantial prevalence of substance use disorders within the USA and consistent findings highlighting the beneficial effects of treatment, few of those with substance use disorders seek any formal or informal treatment services (Cohen, Feinn, Arias, & Kranzler, 2007; Glass et al., 2010; Ilgen et al., 2011). When asked why they have not received services, untreated individuals cite a number of reasons including: lack of social support or health insurance, negative stigma, low confidence in the efficacy of available AUD treatments, and the belief that a person should be strong enough to handle an AUD on his/her own (Cohen et al., 2007; Edlund, Booth, & Feldman, 2009; Grant, Hasin, & Dawson, 1996; Schober & Annis, 1996) These concerns are likely made worse by the fact that many addictions treatment programs have structural problems (cumbersome intake processes, high staff turnover) that make treatment-seeking less appealing to those with substance use disorders (Dunn, Deroo, & Rivara, 2001; McLellan, Carise, & Kleber, 2003; McLellan & Meyers, 2004).

The Role of Motivation in Behavior Change

Given the substantial gap between the potential need for addictions treatment and the rate of utilization of these services, strategies are needed to reach a larger number of individuals with problematic substance use and either help them to change their substance use or, in those with more severe substance-related problems, encourage them to utilize treatments provided by substance abuse specialists. Below, we provide a brief overview of a theory of how motivation influences behavior change and how motivational interventions increase the likelihood of behavior change. Additionally, we note how interventions that target motivation could harness the existing process of behavior change to increase the likelihood that an individual will reduce his or her substance misuse.

Conceptual Model of Behavior Change by Individuals with Problematic Alcohol or Drug Use

Changing entrenched problematic behaviors, such as frequent drug use, often seems daunting to both the patient and the treatment provider. Yet the process of behavior change for problematic substance use shares many common characteristics with other

problem health behaviors (changing diet, exercise, medication adherence, problematic alcohol use, etc.) that have been the targets of successful public health interventions for years (Miller, 1998). Rogers' Protection Motivation Theory (PMT) of threat appraisals and attitude change describes a model for understanding the processes related to changing substance use and other health-related behaviors (Rogers, 1975; Rogers & Prentice-Dunn, 1997). In other words, the theory attempts to explain the factors which cause one to be *motivated* to *protect* him/herself from deleterious outcomes that are associated with risky behaviors. An integration of theory and findings from the brief intervention and motivational interviewing (MI) literature is necessary to explicate how screening and brief intervention strategies can facilitate change (Amrhein, Miller, Yahne, Palmer, & Fulcher, 2003; Dunn et al., 2001; Hettema, Steele, & Miller, 2005).

PMT is one of the most widely studied models of health behavior change (Floyd, Prentice-Dunn, & Rogers, 2000) and has been the basis of research on strategies to: reduce HIV risk behaviors (Fang, Stanton, Li, Feigelman, & Baldwin, 1998; Houlding & Davidson, 2003); increase adherence to cancer risk reduction protocols (McClendon & Prentice-Dunn, 2001; Wood, 2008); and increase exercise in those at elevated risk for cardiac disease (Reid et al., 2007). Additionally, it has been applied to the study of addictive behaviors in interventions designed to reduce the rates of driving while intoxicated (Ben-Ahron, White, & Phillips, 1995), alcohol use in older adults (Runge, Prentice-Dunn, & Scogin, 1993), and drug trafficking in inner-city African American youth (Wu, Stanton, Li, Galbraith, & Cole, 2005). A meta-analysis of 65 studies examined the impact of each of the primary components of PMT (perceived rewards, threat severity, vulnerability, etc.) and subsequent motivation to change problematic behaviors (Floyd et al., 2000). The effect of each of the components of PMT was moderate (Cohen's *d* of 0.5), despite the high degree of variability in sample composition, problems examined, and methods of measurement.

Figure 6.1 presents the core components of the PMT model, along with a representation of how brief motivational interventions are designed to directly address each of these components (e.g., self-efficacy, "response efficacy"). The figure also illustrates the role of motivationally based interventions on later factors related to behavioral change (e.g., intentions/commitment to change, development of a specific change plan). According to the PMT model, motivation to change risky behaviors (referred to as *Protection Motivation*) is a function of weighing the value of maintaining a maladaptive response versus implementing an adaptive response, and is predicted by *threat appraisal* and *coping appraisal*. *Threat appraisal* is hypothesized to reflect (A) the perception of the *rewards* of continued engagement in the problematic behavior, and (B) the perceived *severity* of problems if the behavior remains unchanged, and the perceived *vulnerability* to these problems. *Coping appraisals* reflect (C) the individual's perception of the overall *efficacy* of the strategy to reduce risk ("response efficacy") and the individual's *self-efficacy* to adhere to the change approach, and (D) the response cost, or perception of the unpleasant consequences of adopting the behavior change. Changing motivation is a matter of addressing both *threat appraisals* and *coping appraisals*. Individuals may be particularly amenable to changing their perception of their *threat and coping appraisals* during times of acute stress (considered to be a "teachable moment").

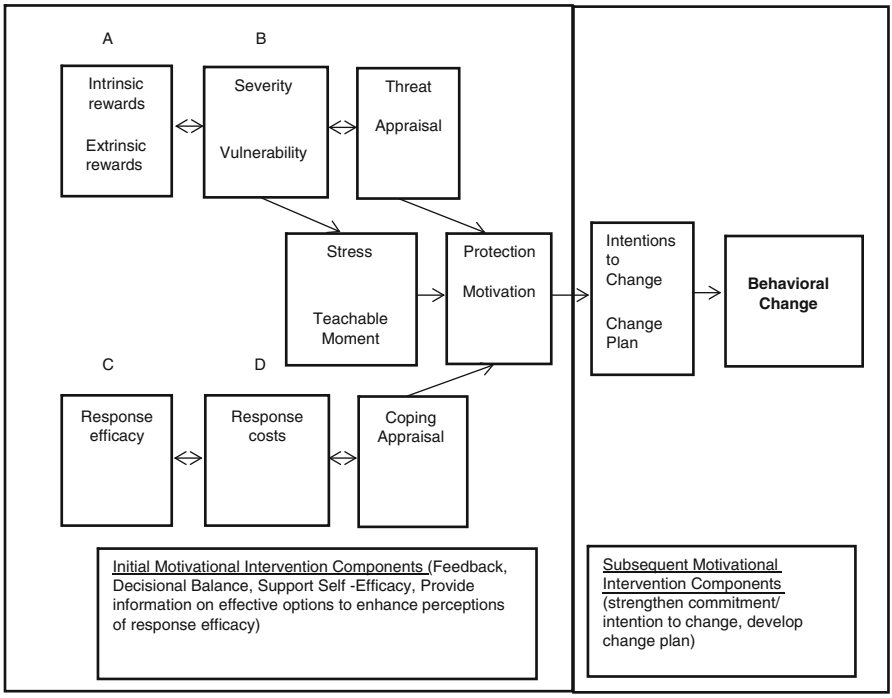

Fig. 6.1 Applying brief motivational interventions to Protection Motivation Theory

As depicted in Fig. 6.1, effective brief motivation-based intervention strategies address the components of the PMT model by: (a) incorporating "feedback" regarding potential consequences of problematic behaviors; (b) exploring the pros and cons of making changes versus the pros and cons of maintaining the status quo through the use of brief "decisional balance" exercises; (c) discussing an individualized menu of options that have been shown to be effective for making changes; and (d) supporting or bolstering participants' personal self-efficacy. Further, research and theories on mechanisms for behavior change illustrate that the likelihood of change can be enhanced by increased motivation coupled with elicitation of verbal or written commitment/intent to change and a specific behavioral change plan (Amrhein et al., 2003; Gollwitzer, 1999; Hettema et al., 2005)

Brief Motivational Interventions to Change Patterns of Substance Misuse

Thus, as described above, motivation to change is theorized to play an important role in influencing the process of behavior change. Understandably, interventions have been developed to target motivation to change. Most of these have grown out

of the initial work on MI. Below, we review the history of MI as well as the evidence supporting the efficacy of this approach. Additionally, we describe two related interventions that have grown out of the substantial research on MI: Motivational Enhancement Therapy (MET) and Screening, Brief Interventions, and Referral to Treatment (SBIRT) approaches.

Motivational Interviewing

MI was developed by William Miller as a client-centered, directive method for enhancing intrinsic motivation to change by exploring and resolving ambivalence (Apodaca & Longabaugh, 2009; Miller & Rollnick, 1991). The general approach for MI encouraged the therapist to closely attend to the client's speech with an emphasis on evoking and strengthening the client's motivation for change. The therapist was encouraged to respond empathically to client's ambivalence to encourage the client, instead of the therapist, to articulate the reasons for making a change (Miller & Rose, 2009)

The four core principles of MI include: expressing empathy, supporting self-efficacy, rolling with resistance, and developing discrepancy (Smedslund et al., 2011). Expressing empathy involves seeing the world through the client's eyes and ensuring that the client feels understood and not judged for their behavior. Supporting self-efficacy reflects attempts by the therapist to increase the client's confidence that they are capable of making a change. The term "rolling with resistance" describes the therapists attempt to avoid direct confrontation and deflect any assertions from the patient that change is not possible and/or desirable. Finally, the emphasis on developing a discrepancy involves helping clients attend to the lack of congruence between their current behaviors and future goals.

Over the past three decades MI and related approaches have been well studied. Several recent empirical reviews and meta-analyses summarize the sizable body of literature supporting the efficacy of MI (Burke, Arkowitz, & Menchola, 2003; Lundahl & Burke, 2009; Lundahl, Kunz, Brownell, Tollefson, & Burke, 2010; Vasilaki, Hosier, & Cox, 2006), MI has been examined for treatment of problematic alcohol use and drug disorders; however, the largest body of evidence is for reducing problem alcohol use. Specifically, MI has been shown to be at least as effective as other treatments for problem drinking and significantly better than no treatment or waitlist controls. In their review, Lundahl and Burke (2009) estimate the difference in success rates for reducing problematic alcohol use in clients who received MI compared with untreated samples to be between 10% and 20% greater. When MI for alcohol misuse is compared to other active alcohol treatments, the difference in success rates was estimated to range from 0% to 20% in favor of MI. In the treatment of Marijuana Dependence, MI has been shown to be at least as effective as other treatments and significantly better than no intervention for individuals with marijuana dependence. Similarly, evidence suggests that MI is significantly more effective than no treatment for cocaine or heroin use (Lundahl & Burke, 2009).

Meta-analyses highlight that, although the between groups effect size was statistically different from zero and indicated superior outcomes for MI, relative to no-treatment controls, effect sizes were largest at first follow-up, suggesting MI's effects fade across time (Vasilaki et al., 2006) Additionally, MI was found to be more efficacious with treatment seeking samples although significant effects of lower magnitude were observed in non-treatment-seeking samples as well. These findings indicate that MI might be more effective in individuals who demonstrate at least some basic level of desire to change their substance use.

Motivational Enhancement Therapy

MET was developed by Miller and colleagues as a manualized, 4-session intervention for individuals with alcohol dependence (Miller, Zweben, DiClemente, & Rychtarik, 1992). This intervention included a greater emphasis on assessment and personalized feedback than standard MI. MET is likely best known for its role as one of the three interventions study in the early 1990s as part of Project MATCH (1993). Project MATCH was a large randomized controlled trial designed to study whether patient characteristics significantly influenced the efficacy of three intervention conditions: 4 sessions of MET, 12 sessions of Cognitive Behavioral Therapy (CBT), and 12 sessions of 12-Step Facilitation (TSF).

In the manualized version of MET from Project MATCH, the first session provided clients with feedback from the initial assessment on drinking level and alcohol-related symptoms. The goals of the first session were to help motivate the client to initiate or maintain positive reductions in their alcohol use. The second session was designed to help clients consolidate commitment to change. The third and fourth sessions of MET, delivered several weeks after the initial two sessions, were designed to monitor progress during this time period and further encourage positive behavior change (Project MATCH, 1993).

Project MATCH was not designed as a comparison between the three therapy sessions. The goal of Project MATCH was to determine whether various subgroups of alcohol-dependent clients would respond differently to three manual-guided, individual treatments. Participants in all treatment groups showed significant improvements on all drinking measures, with no consistent differences between treatment groups. In examining client x intervention interactions (to identify client characteristics that might make certain treatments particularly suitable for certain individuals), Project MATCH found that, for client's high on anger, MET outperformed the other treatments on both primary drinking outcome measures (percentage of days abstinent and average number of drinks per drinking day) at 1- and 3-year follow-ups (Project MATCH Research Group, 1997, 1998). Results from Project MATCH show that outpatient clients low in motivation ultimately reported greater benefit from MET than from the other two interventions. For clients less motivated to change, at the beginning of the post-treatment period, CBT appeared to be superior to MET. However, over the course of the follow up the outcomes for

the two treatments reversed, with those who received MET reporting less alcohol use than those who received CBT; these results are consistent with a possible delayed effect for MET in those with low initial motivation to change (Project MATCH Research Group, 1997, 1998). Also, the performance of MET relative to CBT and TSF suggests that this 4-session, interventional has comparable outcomes to the other two 12-session interventions; thus, MET may be a more cost-effective treatment than either CBT or TSF (Project MATCH Research Group, 1997)

Screening, Brief Intervention, Referral to Treatment

Based partially on the success of the trials of brief motivational interventions described above, attempts have been made to deliver brief interventions within standard medical settings. These approaches are different from standard MIs in that they are typically delivered by nonmental health providers in settings where addictions-related services have not typically been available. These brief interventions are typically referred to as SBIRT interventions and are designed to address a range of alcohol use patterns and related consequences ranging from occasional risky substance use to substance dependence (Babor et al., 2007).

Previous research has shown that brief interventions for at-risk or hazardous drinking are effective in reducing drinking levels across a variety of health-care settings (Babor & Grant, 1992; Chick, Lloyd, & Crombie, 1985; Fleming, Barry, Manwell, Johnson, & London, 1997; Harris & Miller, 1990; Wallace, Cutler, & Haines, 1988). Meta-analyses of randomized controlled studies have found that these techniques generally reduce drinking compared to control conditions (Dunn et al., 2001). Brief intervention approaches have been also used among emergency department (ED) patients admitted to hospitals (Dyehouse & Sommers, 1995; Welte, Perry, Longabaugh, & Clifford, 1998) and with injured patients in the ED (Bazargan-Hejazi et al., 2005; Blow et al., 2006; Gentilello et al., 1999; Harvard, Hill, & Buxton, 2008; Longabaugh et al., 2001; Mello et al., 2005). A recent meta-analysis of ED studies concluded that ED-based interventions significantly reduce alcohol-related injury but do not necessarily decrease alcohol consumption (Harvard et al., 2008). Although a number of studies address the need for and use of brief interventions for drug use (Baker, Kochan, Dixon, Heather, & Wodak, 1994; Compton, Monahan, & Simmons-Cody, 1999; Dunn & Ries, 1997; Greber, Allen, Soeken, & Solounias, 1997; Lang, Engelander, & Tracey Brooke, 2000; Weaver, Jarvis, & Schnoll, 1999), there are few published randomized controlled trials with drug users. Despite some differences in existing studies, such as duration of the interventions, promising treatment results have been shown in studies investigating the effectiveness of brief interventions among cocaine, heroin, and amphetamine users recruited from a variety of non-ED based settings (Baker et al., 2004; Bernstein et al., 2007; Bernstein, Bernstein, & Levenson, 1997; Stotts, Schmitz, Rhoades, & Grabowski, 2001). For example, Bernstein et al. (2005) reported that a brief intervention for heroin and/or cocaine users recruited from several walk-in non-emergent

clinics (urgent care, women's clinic, and a homeless clinic) that included a motivational intervention session delivered by trained peer educators and a subsequent booster call 10 days later, led to a reduction in heroin and cocaine use, and an increased likelihood of abstinence from these drugs at 6-month follow-up visit. Taken together, the literature generally supports SBIRTs as potentially effective interventions to reduce substance use following a medical visit.

Conclusions

Overall, large numbers of adults within the USA report some form of recent problematic alcohol use and/or drug use. However, many of these individuals never utilize formal additions treatment services. Current theories of behavior change highlight the potential importance of motivation as an important determinant of the decision to decrease or cease substance misuse. In order to better harness an individual's intrinsic motivation, several strategies have been developed to increase motivation in a non-confrontational manner. Over the past three decades of study, research has generally supported the efficacy of these brief motivational interventions in their ability to help individuals reduce their substance use. Additionally, a growing body of research supports the utilization of these brief interventions outside standard addictions treatment settings. Broadening the settings in which these services are delivered as well as delivering interventions that are shorter and potentially more appealing than more-traditional addictions treatment services increases the likelihood that individuals with substance-related problems will receive the assistance that they need to reduce their use of alcohol or drugs. As brief motivational interventions are delivered in a broader array of treatment environments, it is important for social workers in all settings to become familiar with these strategies.

Acknowledgements We would like to thank Michelle Sanborn for her help preparing and editing this manuscript.

References

Amrhein, P. C., Miller, W. R., Yahne, C. E., Palmer, M., & Fulcher, L. (2003). Client commitment language during motivational interviewing predicts drug use outcomes. *Journal of Consulting and Clinical Psychology, 71*, 862–878.

Apodaca, T. R., & Longabaugh, R. (2009). Mechanisms of change in motivational interviewing: A review and preliminary evaluation of the evidence. *Addiction, 104*, 705–715.

Babor, T., & Grant, M. (1992). *Project on identification and management of alcohol related problems. Report on Phase II: A randomized clinical trial of brief interventions in primary health care*. Paper presented at the World Health Organization, Geneva.

Babor, T. F., McRee, B. G., Kassebaum, P. A., Grimaldi, P. L., Ahmed, K., & Bray, J. (2007). Screening, Brief Intervention, and Referral to Treatment (SBIRT): Toward a public health approach to the management of substance abuse. *Substance Abuse, 28*, 7–30.

Baker, A., Kochan, N., Dixon, J., Heather, N., & Wodak, A. (1994). Controlled evaluation of a brief intervention for HIV prevention among injecting drug users not in treatment. *AIDS Care, 6*, 559–570.

Baker, A., Lee, N. K., Claire, M., Lewin, T. J., Grant, T., Pohlman, S., et al. (2004). Brief cognitive behavioural interventions for regular amphetamine users: A step in the right direction. *Addiction, 100*, 367–378.

Bazargan-Hejazi, S., Bing, E., Bazargan, M., Der-Martirosian, C., Hardin, E., Bernstein, J., et al. (2005). Evaluation of a brief intervention in an inner-city emergency department. *Annals of Emergency Medicine, 461*, 67–76.

Ben-Ahron, V., White, D., & Phillips, K. (1995). Encouraging drinking at safe limits on single occasions: The potential contribution of protection motivation theory. *Alcohol and Alcoholism, 30*, 633–639.

Bernstein, E., Bernstein, J., & Levenson, S. (1997). Project ASSERT: An ED-based intervention to increase access to primary care, preventive services, and the substance abuse treatment system. *Annals of Emergency Medicine, 30*, 181–189.

Bernstein, J., Bernstein, E., Tassiopoulos, K., Heeren, T., Levenson, S., & Hingson, R. (2005). Brief motivational intervention at a clinic visit reduces cocaine and heroin use. *Drug and Alcohol Dependence, 77*, 49–59.

Bernstein, K. T., Bucciarelli, A., Piper, T. M., Gross, C., Tardiff, K., & Galea, S. (2007). Cocaine- and opiate-related fatal overdose in New York City, 1990–2000. *BMC Public Health, 7*, 31.

Blow F. C., Barry K. L., Walton M. A., Maio R.F., Chermack S. T., Bingham C. R., Ignacio R. V., Strecher V. J. (2006). The efficacy of two brief intervention strategies among injured, at-risk drinkers in the emergency department: impact of tailored messaging and brief advice. *Journal of Studies on Alcohol, 67*(4):568–78.

Booth, B. M., Walton, M. A., Barry, K. L., Cunningham, R. M., Chermack, S. T., Blow, F. C. (2011). Substance use, depression, and mental health functioning in patients seeking acute medical care in an inner-city ED. *The Journal of Behavioral Health Services and Research, 38*(3):358–72.

Bradley, K. A., Bush, K. R., Davis, T. M., Dobie, D. J., Burman, M. L., Rutter, C. M., et al. (2001). Binge drinking among female Veterans Affairs patients: Prevalence and associated risks. *Psychology of Addictive Behavior, 15*, 297–305.

Burke, B. L., Arkowitz, H., & Menchola, M. (2003). The efficacy of motivational interviewing: A meta-analysis of controlled clinical trials. *Journal of Consulting and Clinical Psychology, 71*, 843–861.

Center for Disease Control and Prevention. (2009). *Quick stats on binge drinking*. Retrieved 4/11/2009, http://www.cdc.gov/alcohol/quickstats/binge_drinking.htm.

Chick, J., Lloyd, G., & Crombie, E. (1985). Counselling problem drinkers in medical wards: A controlled study. *British Medical Journal, 290*, 965–967.

Cohen, E., Feinn, R., Arias, A., & Kranzler, H. R. (2007). Alcohol treatment utilization: Findings from the National Epidemiologic Survey on Alcohol and Related Conditions. *Drug and Alcohol Dependence, 86*, 214–221.

Compton, P., Monahan, G., & Simmons-Cody, H. (1999). Motivational interviewing: An effective brief intervention for alcohol and drug abuse patients. *Nurse Practitioner, 24*, 27–38.

Dawson, D. A., & Grant, B. F. (1998). Family history of alcoholism and gender: Their combined effects on DSM-IV alcohol dependence and major depression. *Journal of Studies on Alcohol, 59*, 97–106.

Dunn, C., Deroo, L., & Rivara, F. P. (2001). The use of brief interventions adapted from motivational interviewing across behavioral domains: A systematic review. *Addiction, 96*, 1725–1742.

Dunn, C. W., & Ries, R. (1997). Linking substance abuse services with general medical care: Integrated, brief interventions with hospitalized patients. *American Journal of Drug and Alcohol Abuse, 23*, 1–13.

Dyehouse, J. M., & Sommers, M. S. (1995). Brief intervention as an advanced practice strategy for seriously injured victims of multiple trauma. *American Association of Critical-Care Nurses, Clinical Issues, 6*, 53–62.

Edlund, M., Booth, B., & Feldman, Z. (2009). Perceived need for treatment for alcohol use disorders: Results from two national surveys. *Psychiatric Services, 60*, 1618–1628.

Fang, X., Stanton, B., Li, X., Feigelman, S., & Baldwin, R. (1998). Similarities in sexual activity and condom use among friends within groups before and after a risk-reduction intervention. *Youth & Society, 29*, 431–450.

Fleming, M. F., Barry, K. L., Manwell, L. B., Johnson, K., & London, R. (1997). Brief physician advice for problem alcohol drinkers: A randomized controlled trial in community-based primary care practices. *JAMA, 277*, 1039–1045.

Floyd, D. L., Prentice-Dunn, S., & Rogers, R. W. (2000). A meta-analysis of research on protection motivation theory. *Journal of Applied Social Psychology, 30*, 407–429.

Gentilello, L. M., Rivara, F. P., Donovan, D. M., Jurkovich, G. J., Daranciang, E., Dunn, C. W., et al. (1999). Alcohol interventions in a trauma center as a means of reducing the risk of injury recurrence. *Annals of Surgery, 230*, 473–480.

Glass, J. E., Perron, B. E., Ilgen, M. A., Chermack, S. T., Ratliff, S., & Zivin, K. (2010). Prevalence and correlates of specialty substance use disorder treatment for Department of Veterans Affairs Healthcare System patients with high alcohol consumption. *Drug and Alcohol Dependence, 112*, 150–155.

Gollwitzer, P. M. (1999). Implementation intentions—Strong effects of simple plans. *American Psychologist, 54*, 493–503.

Grant, B. F. (2000). Estimates of US children exposed to alcohol abuse and dependence in the family. *American Journal of Public Health, 90*, 112–115.

Grant, B. F., Hasin, D. S., & Dawson, D. A. (1996). The relationship between DSM-IV alcohol use disorders and DSM-IV major depression: Examination of the primary-secondary distinction in a general population sample. *Journal of Affective Disorders, 38*, 113–128.

Greber, R. A., Allen, K. M., Soeken, K. L., & Solounias, B. L. (1997). Outcome of trauma patients after brief intervention by a substance abuse consultation service. *American Journal on Addictions, 6*, 38–47.

Harris, K., & Miller, W. (1990). Behavioral self-control training for problem drinkers: Components of efficacy. *Psychology of Addictive Behavior, 4*, 82–90.

Harvard, S. S., Hill, W. D., & Buxton, J. A. (2008). Harm reduction product distribution in British Columbia. *Canadian Journal of Public Health. Revue Canadienne de Sante Publique, 99*, 446–450.

Hettema, J., Steele, J., & Miller, W. R. (2005). Motivational interviewing. *Annual Review of Clinical Psychology, 1*, 91–111.

Houlding, C., & Davidson, R. (2003). Beliefs as predictors of condom use by injecting drug users in treatment. *Health Education Research, 18*, 145–155.

Ilgen, M. A., Price, A. M., Burnett-Zeigler, I., Perron, B., Islam, K., Bohnert, A. S., et al. (2011). Longitudinal predictors of addictions treatment utilization in treatment-naive adults with alcohol use disorders. *Drug and Alcohol Dependence, 113*, 215–221.

Lang, E., Engelander, M., & Tracey Brooke, T. (2000). Report of an integrated brief intervention with self-defined problem cannabis users. *Journal of Substance Abuse Treatment, 19*, 111–116.

Longabaugh, R., Woolard, R. E., Nirenberg, T. D., Minugh, A. P., Becker, B., Clifford, P. R., et al. (2001). Evaluating the effects of a brief motivational intervention for injured drinkers in the emergency department. *Journal of Studies on Alcohol, 62*, 806–816.

Lundahl, B., & Burke, B. L. (2009). The effectiveness and applicability of motivational interviewing: A practice-friendly review of four meta-analyses. *Journal of Clinical Psychology, 65*, 1232–1245.

Lundahl, B. W., Kunz, C., Brownell, C., Tollefson, D., & Burke, B. L. (2010). A meta-analysis of motivational interviewing: Twenty-five years of empirical studies. *Research on Social Work Practice, 20*, 137–160.

McClendon, B. T., & Prentice-Dunn, S. (2001). Reducing skin cancer risk: An intervention based on protection motivation theory. *Journal of Health Psychology, 6*, 321–328.

McLellan, A., Carise, D., & Kleber, H. D. (2003). Can the national addiction treatment infrastructure support the public's demand for quality care. *Journal of Substance Abuse Treatment, 25*, 117–121.

McLellan, A. T., & Meyers, K. (2004). Contemporary addiction treatment: A review of systems problems for adults and adolescents. *Biological Psychiatry, 56*, 764–770.

Mello, M. J., Nirenberg, T. D., Longabaugh, R., Woolard, R., Minugh, A., Becker, B., et al. (2005). Emergency department brief motivational interventions for alcohol with motor vehicle crash patients. *Annals of Emergency Medicine, 45*, 620–625.

Midanik, L. T., & Greenfield, T. K. (2000). Trends in social consequences and dependence symptoms in the United States: The National Alcohol Surveys, 1984–1995. *American Journal of Public Health, 90*, 53–56.

Miller, W. R. (1998). Why do people change addictive behavior? The 1996 H. David Archibald Lecture. *Addiction, 93*, 163–172.

Miller, W. R., & Rollnick, S. (1991). *Motivational Interviewing: Preparing people to change addictive behaviors*. New York: Guilford Press.

Miller, W. R., & Rose, G. S. (2009). Toward a theory of motivational interviewing. *American Psychologist, 64*, 527–537.

Miller, W. R., Zweben, A., DiClemente, C. C., & Rychtarik, R. G. (1992). *Motivational-enhancement therapy manual: A clinical research guide for therapists treating individuals with alcohol abuse or dependence*. Rockville, MD: National Institute on Alcohol Abuse and Alcoholism.

Mulia, N., Ye, Y., Greenfield, T. K., Zemore, S. E. (2009). Disparities in alcohol-related problems among White, Black, and Hispanic Americans. *Alcoholism, Clinical and Experimental Research, 33*(4):654–62. Epub 2009 Jan 15.

National Institute on Alcohol Abuse and Alcoholism. (2005). *Helping patients who drink too much: A clinician's guide*. Bethesda, MD: National Institute on Alcohol Abuse and Alcoholism.

Project MATCH. (1993). Project MATCH (Matching Alcoholism Treatment to Client Heterogeneity): Rationale and methods for a multisite clinical trial matching patients to alcoholism treatment. *Alcohol Clinical and Experimental Research, 17*, 1130–1145.

Project MATCH Research Group. (1997). Matching alcoholism treatments to client heterogeneity: Project MATCH Posttreatment drinking outcomes. *Journal of Studies on Alcohol, 58*, 7–29.

Project MATCH Research Group. (1998). Matching alcoholism treatments to client heterogeneity: Project MATCH three-year drinking outcomes. *Alcohol Clin Exp Res, 22*, 1300–1311.

Reid, R. D., Tulloch, H., Kocourek, J., Morrin, L. I., Beaton, L. J., Papadakis, S., et al. (2007). Who will be active? Predicting exercise stage transitions after hospitalization for coronary artery disease. *Canadian Journal of Physiology and Pharmacology, 85*, 17–23.

Rogers, R. W. (1975). A protection motivation theory of fear appeals and attitude change. *Journal of Psychology: Interdisciplinary and Applied, 91*, 93–114.

Rogers, R. W., & Prentice-Dunn, S. (1997). Protection motivation theory. In D. Gochman (Ed.), *Handbook of health behavior research. Vol. 1: Determinants of health behavior: Personal and social* (Vol. 1, pp. 113–132). New York, NY: Plenum.

Runge, C., Prentice-Dunn, S., & Scogin, F. (1993). Protection motivation theory and alcohol use attitudes among older adults. *Psychological Reports, 73*, 96–98.

SAMHSA. (2007). *Results from the 2006 National Survey on Drug Use and health: National Findings*. Rockville: SAMHSA. Retrieved from http://www.oas.samhsa.gov/.

SAMHSA. (2010). *Results from the 2009 national Survey on Drug Use and health; SMA 10-4856*. Rockville, MD: SAMHSA.

Schober, R., & Annis, H. M. (1996). Barriers to help-seeking for change in drinking: A gender-focused review of the literature. *Addictive Behaviors, 21*, 81–92.

Schomerus, G., Lucht, M., Holzinger, A., Matschinger, H., Carta, M. G., & Angermeyer, M. C. (2011). The stigma of alcohol dependence compared with other mental disorders: A review of population studies. *Alcohol and Alcoholism, 46*, 105–112.

Smedslund, G., Berg, R. C., Hammerstrøm, K. T., Steiro, A., Leiknes, K. A., Dahl, H. M., & Karlsen, K. (2011). Motivational interviewing for substance abuse. *Cochrane Database Syst Rev, 11*(5):CD008063.

Smith, S. M., Dawson, D. A., Goldstein, R. B., & Grant, B. F. (2010). Examining perceived alcoholism stigma effect on racial-ethnic disparities in treatment and quality of life among alcoholics. *Journal of Studies on Alcohol and Drugs, 71*, 231–236.

Smith, M. J., Whitaker, T., & Weismiller, T. (2006). Social workers in the substance abuse treatment field: A snapshot of service activities. *Health and Social Work, 31*, 109–115.

Stotts, A. L., Schmitz, J. M., Rhoades, H. M., & Grabowski, J. (2001). Motivational interviewing with cocaine-dependent patients: A pilot study. *Journal of Consulting and Clinical Psychology, 69*, 858–862.

Vasilaki, E. I., Hosier, S. G., & Cox, W. M. (2006). The efficacy of motivational interviewing as a brief intervention for excessive drinking: A meta-analytic review. *Alcohol and Alcoholism, 41*, 328–335.

Wallace, P., Cutler, S., & Haines, A. (1988). Randomised controlled trial of general practitioner intervention in patients with excessive alcohol consumption. *British Medical Journal, 297*, 663–668.

Weaver, M. F., Jarvis, M. A., & Schnoll, S. H. (1999). Role of the primary care physician in problems of substance abuse. *Archives of Internal Medicine, 159*, 913–924.

Welte, J. W., Perry, P., Longabaugh, R., & Clifford, P. R. (1998). An outcome evaluation of a hospital-based early intervention program. *Addiction, 93*, 573–581.

Wood, M. E. (2008). Theoretical framework to study exercise motivation for breast cancer risk reduction. *Oncology Nursing Forum, 35*, 89–95.

World Health Organization. (2010). *World health statistics*. New York, NY: World Health Organization.

Wu, Y., Stanton, B. F., Li, X., Galbraith, J., & Cole, M. L. (2005). Protection motivation theory and adolescent drug trafficking: Relationship between health motivation and longitudinal risk involvement. *Journal of Pediatric Psychology, 30*, 127–137.