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Unraveling the Mysteries of Addiction Treatment and Recovery: An Interview with Rudolf Moos, PhD

William L. White, MA

For nearly five decades, Rudy Moos, PhD, has been one of the giants of modern addiction research. I believe he has, more than any other research scientist, focused on questions of the greatest import to addiction counselors and the individuals and families they serve. His published studies have dramatically expanded our knowledge of addiction treatment and the processes of long-term addiction recovery.

As a child, Rudy Moos fled Berlin, Germany before the outbreak of World War II—first to Belgium and England and then migrating with his family to San Francisco, California. He later completed his college and graduate work in Clinical Psychology at the University of California and in the years since has served as a Professor of Psychiatry and Behavioral Sciences at Stanford University and has led (now as Emeritus Director) the Center for Health Care Evaluation at the Veterans Affairs Health Care System and Stanford University Medical Center in Palo Alto, California.

Dr. Moos has authored or edited 15 books and more than 450 articles in peer-reviewed scientific journals and professional books. He has served on the editorial boards of more than 30 scientific journals and has received numerous awards for his groundbreaking research, including awards from the American Psychological Association, the American Psychiatric Association, the National Institute on Alcohol Abuse and Alcoholism, the Department of Veterans Affairs, and the American Society of Addiction Medicine.

In 2007, Dr. Moos was interviewed in the international journal *Addiction* [*103*(1), 13-23] about his life and career. In the below 2011 interview, Dr. Moos highlights in much greater detail those studies that have the greatest bearing on the practice of addiction counseling and the delivery of peer-based recovery support services.

Remission and Recovery

Bill White: The majority of research in the addictions field has historically focused on the study of addiction-related pathologies and the processes of treatment and post-treatment relapse. In contrast, your work has emphasized how people recover from severe substance use disorders. How did you come to develop this recovery perspective?

Dr. Moos: I think this developed from my experiences as a child and young adult and, perhaps unexpectedly in light of these experiences, from an underlying optimistic view of life. My early years were difficult ones, as I was separated from my parents and lived in several places before we were able to come to the United States. I knew many people who lived through substantial traumas, such as the loss of all their possessions, sudden imprisonment in a concentration camp, forced emigration from their motherland, and the experience of abject poverty and the need to learn a new vocation and establish an entirely new life in a distant country. Nevertheless, the majority of these people confronted and managed to surmount their problems. This left me with the feeling that most life crises can be overcome and that there always is hope for the future.

Later, when I began my professional career, in which I was initially immersed in clinical work focused on the assessment and evaluation of clients with substance use and psychiatric disorders and then later in treatment evaluation research, I thought that the same principles would apply to confronting and overcoming substance use disorders. I found support for my ideas in the idea that life crises are turning points, times of opportunity as well as risk. Consistent with my early experiences, I found that many individuals are remarkably resilient and even thrive in the face of adversity and manage to lead healthy and productive lives. I thought that the same principles should apply to at least some—and perhaps many—individuals with substance use disorders (Schaefer & Moos, 1998).

Bill White: How did your colleagues react to this recovery emphasis?

Dr. Moos: When I began my work, there was a strong and pervasive opinion in the field that recovery from an addiction either was not possible or at least was highly unlikely and ephemeral. I well remember enduring many professional meetings, some with nationally known experts, in which

the prevailing myth was that recovery from addiction is a "whimsical concept," in part because of the assumption that there were unchangeable genetic factors and largely unchangeable neurochemical factors that would inexorably drive an individual who was or had been dependent on substances to continue or resume substance use after a "sober interval." I sometimes felt that I was in a religious meeting and was listening to revealed dogma.

Bill White: What distinctions would you make between the terms resilience, remission, and recovery as they are used in the addictions field?

Dr. Moos: These terms are used very inconsistently in our field. I personally prefer to use abstinence from alcohol and/or drugs as an indication of remission or recovery, especially for individuals who were formerly dependent on these substances and for most individuals who enter treatment or a self-help program. More specifically, with respect to remission, it is important to specify the relevant time interval, so there can be 1-month, 3-month, or 12-month remission. It is entirely arbitrary, but after an individual has been essentially continuously abstinent for 2 years, I think it is appropriate to consider the individual in stable remission.

I do want to note that the growing emphasis in the field on "harm reduction" is important, but I still think it is preferable clinically to establish and hold out the hope of aspiring to a "higher" goal. Nevertheless, it is important to remember that, among individuals with alcohol use disorders, remission has been defined as freedom from symptoms of DSM-IV alcohol dependence, and that a certain proportion of individuals who achieve this type of remission become "low-risk" non-problem drinkers.

The definition of "recovery" is also quite arbitrary, but I favor the idea that individuals who have achieved 5 years of stable remission can be considered "recovered." This time interval is consistent with medical definitions of recovery from disorders such as cancer, and is a good empirical marker because relapse after 5 years of stable remission is relatively unlikely.

Resilience is a term that is used quite broadly in psychological research in areas other than addiction. It usually is considered to reflect a characteristic of an individual who encounters one or more highly stressful situations or life crises and yet is able to manage them and achieve or

maintain reasonable psychological well-being. However, an individual may be able to effectively manage one type of stressor (and thus be characterized as resilient), but not another (and thus be characterized as not resilient). Therefore, I prefer to think of resilience as an outcome of the interplay between an individual and a particular stressful life context.

Bill White: What do we know scientifically about the prevalence of recovery in the United States? Can we estimate a recovery rate for persons with a substance use disorder with and without professional treatment or other forms of help?

Dr. Moos: We do not have sufficient data to estimate the nationwide prevalence of recovery, assuming that recovery is defined as 5 years or more of stable remission. However, long-term follow-up studies of individuals with alcohol use disorders in community samples, who were largely untreated, have obtained remission rates varying from 27% to 69%, with an annualized rate of 3.4%. Long-term follow-ups of individuals treated for alcohol use disorders have identified remission rates ranging from 21% to 86%, with an annualized rate of 5.3%. These findings suggest that remission rates for treated individuals with alcohol use disorders may be somewhat higher than for those who remain untreated; however, this conclusion needs to be tempered by the fact that there are many differences between these two groups of individuals other than their treated or untreated status (Finney et al., in press).

Longer-term follow-ups of individuals dependent on drugs (primarily cocaine and opioids) have obtained remission rates varying from 30% to 90%, with an average annual rate of 4% (Finney et al., in press). There do not appear to be any comparable long-term outcome studies of community samples (untreated) of individuals with these types of drug use disorders.

Bill White: A central question that pervades your work is why some people recover while others escalate their drinking with such tragic outcomes. What tentative conclusions have you reached on this question?

Dr. Moos: A host of factors can help to initiate and maintain the recovery process. One key triggering factor is cognitive evaluation and reappraisal, which guides and synthesizes efforts at problem identification and resolution. Realistic appraisal of the costs and benefits of continued addictive behavior underlies entry into treatment and changes associated

with treatment; it also supports changes that occur without treatment. Some individuals reevaluate their behavior when they face severe problems related to substance misuse, such as a serious health, financial, or legal problem; an accident; pressure from important people in their lives; personal humiliation; or a temporary loss of control. Inspiration can also come from the hope that change and a better life are possible.

Maintenance factors help to nurture and sustain the recovery process. These factors include support from a spouse or partner, extended family, an employer, and friends; changes in lifestyle and social activities; less tolerance of and growing physical aversion to the abused substance; and an emerging sense of self-efficacy, commitment, accomplishment, and pride at achieving sobriety. When individuals decide to change their lives, influences from treatment and self-help groups can serve as maintenance factors and help them develop better personal and social resources.

Other factors in people's lives, including life stressors, social resources, and coping skills, also influence the resolution of addictive disorders. For example, individuals with more cohesive and well-organized families and fewer life stressors are more likely to follow a course of long-term recovery. People's active efforts to confront and manage their life circumstances are also important. In this respect, individuals who rely more on approach coping (active problem solving, seeking guidance and support) and less on avoidance coping (cognitive avoidance, emotional discharge) tend to be more successful in managing life crises and their consequences and to be more likely to achieve stable remission and recovery. I should add that, for individuals who enter treatment, a supportive, well-organized treatment program with high expectations for recovery also is associated with a higher likelihood of stable remission and recovery (Moos, 1997; Moos, Finney, & Cronkite, 1990).

Pathways to Recovery

Bill White: You were among the first researchers to study the durability of natural recovery versus recovery supported by participation in addiction treatment or a recovery mutual aid society. What did you discover about recovery durability in these studies?

Dr. Moos: In our study of initially untreated individuals with alcohol use disorders, compared to those who obtained help, those who did not were less

likely to achieve 3-year remission and subsequently were more likely to relapse. More specifically, by a 3-year follow-up, 62% of individuals who obtained help (participated in treatment or AA) were remitted, compared with only 43% of those who obtained no help. By a 16-year follow-up, 61% of the 3-year remitted individuals in the no help group had relapsed, compared with only 43% of 3-year remitted individuals in the helped group. These findings provide some support for the idea that participation in professional treatment and/or self-help groups may heighten the likelihood of short-term and stable remission (Moos & Moos, 2006).

Predictors of Recovery

Bill White: One of the traditional predictors of recovery (and a litmus test to enter treatment) has been that of verbalized motivation to change. Is the ability or inability to verbalize motivation for recovery a predictor of long-term recovery outcome?

Dr. Moos: Clinical lore and some research suggest that individuals who verbalize strong motivation for recovery are more likely to achieve positive substance use outcomes. However, our studies have not found much if any association between an individual's "stage of change" at baseline or entry to treatment and the likelihood of remission. Moreover, although these findings are somewhat controversial, individuals who are court-mandated to treatment (and therefore presumably have relatively little intrinsic motivation to change), appear to show substance use outcomes that are as good as those of individuals who enter treatment voluntarily (and therefore presumably have more motivation to change). I think that the verbalization of motivation to change at baseline or treatment entry is not a strong predictor of recovery because it is highly amenable to change over time. The strength of motivation to change is very evanescent and is highly dependent on immediately prior experiences and the social context (Kelly et al., 2005; Ouimette et al., 1998).

Bill White: The addictions field has traditionally viewed predictors of recovery as residing within the individual, but your work suggests a complex interaction of personal characteristics, characteristics of the treatment milieu, and the nature of the post-treatment family and social environment. What have you learned about how each of these three elements contributes to the recovery process?

Dr. Moos: We compared the predictive strength of these three sets of factors in one of our follow-ups of individuals with alcohol use disorders who were treated in residential programs. In brief, patient characteristics at treatment entry predicted only about 1% of the variance in 6-month alcohol consumption and abstinence outcomes, whereas treatment characteristics predicted about 7-8%. The combination of patient and treatment factors predicted another 6% of the variance in outcome. Thus, the quality of the treatment environment in residential programs was a more important predictor of short-term alcohol-related outcomes than were patient characteristics at intake.

In a 2-year follow-up of a portion of this sample, patient characteristics at intake accounted for 7% of the variance in the alcohol-related outcome criteria, treatment factors accounted for about 2%, and life context and coping factors accounted for an added 15% of the variance. These findings are quite consistent with the growing literature in this area, which shows that treatment has some short-term positive influence on outcome, but that these modest effects diminish over time. Consideration of life context and coping factors more than doubled the explained variance in 2-year outcome over that accounted for by patient characteristics at baseline and treatment factors (Moos et al., 1990).

Bill White: One of the themes within your career has been concern about how co-occurring psychiatric illness, particularly depression and PTSD, influence recovery outcomes. What conclusions have you drawn from your studies of this question?

Dr. Moos: The empirical findings have been somewhat mixed, but in general, they support the conclusion that dually diagnosed individuals (that is, those with both substance use and psychiatric disorders) treated in substance use disorder programs achieve substance use outcomes that are roughly comparable to those achieved by individuals who have only substance use disorders. However, as might be expected, dually diagnosed individuals treated in these programs do not achieve adequate psychiatric outcomes; that is, they tend to continue to experience relatively high levels of anxiety, depression, and serious psychiatric symptoms. These individuals can benefit if they obtain either concomitant or follow-up psychiatric treatment (Boden & Moos, 2009; Moggi et al., 1999; Ouimette, Ahrens et al., 1998; Ouimette et al., 1999, 2000, 2003).

Notwithstanding these findings, it does seem that patients with substance use and major depressive disorders may not assimilate as readily into, or benefit as much from, participation in 12-step self-help groups. Specifically, we found that these dually diagnosed patients were initially less socially involved in and obtained less benefit from 12-step self-help groups than did patients who had only substance use disorders. However, substance use outcomes did not differ by diagnostic group. In contrast, despite using substantially more professional outpatient services, the dually diagnosed patients continued to experience significant levels of depression. Treatment providers may need to allocate more resources to targeting depressive symptoms in patients with both substance use and major depressive disorders (Kelly et al., 2003).

Role of Family and Community in Recovery

Bill White: Could you elaborate on your work on the influence of the family and social milieu on recovery outcomes?

Dr. Moos: Our findings have highlighted the importance of individuals' life contexts in helping to shape the recovery process. Our initial work found that family cohesion, expressiveness, and organization predicted better long-term outcomes. In subsequent studies, we showed that higher quality relationships with friends, spouse/partner, and extended family members predicted a higher likelihood of remission (Humphreys, Moos, & Cohen, 1997; McKee et al., 2011).

Another study showed that patients whose relationships lasted through the first year post-treatment had better 1-year outcomes than patients whose relationships ended. Relationships with more positive partner behaviors and fewer negative partner behaviors at baseline were more likely to remain intact over the following year. Conversely, when there were more interpersonal stressors in relationships with a partner, and the partner had a substance use problem, patients experienced poorer substance use outcomes (Tracy et al., 2005).

We recently examined indices of personal and social resources as predictors of medium- and long-term alcohol use disorder outcomes. In general, protective resources associated with social learning (self-efficacy and approach coping), behavioral economics (health and financial resources and resources associated with AA), and social control theory (bonding with

family members, friends, and coworkers) predicted better alcohol-related and psychosocial outcomes. A summary index of protective resources associated with all three theories predicted a higher likelihood of remission. Moreover, these protective resources strengthened the positive influence of treatment on short-term remission. Accordingly, application of social learning, behavior economics, and social control theories may help to identify predictors of remission and thus to allocate treatment more efficiently (Moos & Moos, 2007).

Bill White: If we as a field truly understood this influence, how might we be "treating" the family and the community environment of each patient?

Dr. Moos: We know that substance use treatment is quite successful in achieving cessation or reduction in substance use and improvements in other areas of functioning in the short run, but that they do not tend to maintain these positive changes over time. Patients' life contexts and coping skills often are thought to be peripheral to treatment, but they continue long after treatment, are more pervasive and intense, and have a stronger impact on outcome.

These facts highlight a reason for the decay of treatment benefits over time. Treatment does not substantially influence the life context and coping factors that are closely linked to the process of remission and relapse. Thus, treatment should be oriented more toward strengthening natural recovery processes and improving patients' life contexts and their ability to manage these contexts.

Most broadly, a biopsychosocial approach to treating substance use disorders requires the application of biological, psychological, and environmental assessment procedures. However, many clinicians focus primarily on demographic factors and the history of alcohol-related symptoms and behavior. They tend to obtain detailed information on patient characteristics that are difficult or impossible to change. In contrast, I recommend more emphasis on identifying potentially alterable characteristics of patients and their life contexts and using this information in the treatment process to promote better outcome. In addition, because patients and their family members and friends influence each other, we need to regularly evaluate the status of the patients' family and social system.

Treatment Effects

Bill White: You have spent much of your life studying the effects of addiction treatment. Based on the findings of these studies, how would you describe the potential role of addiction treatment in long-term recovery?

Dr. Moos: Intensive residential treatment and continuing halfway house and/or outpatient care can play an important role in increasing the likelihood of short-term and stable remission. Participation in treatment can strengthen an individual's motivation to change; provide role models who espouse abstinence-oriented norms and effective coping skills; establish a supportive, goal-directed, and structured environment that can serve as a respite from a stressful life context; offer rewarding activities that can take the place of substance use; and promote improvement in an individual's self-efficacy and coping skills. In general, however, treatment can only provide these benefits in the short-term, although newer approaches of adaptive and continuing care may help support individuals over more extended time intervals. In the long-term, however, personal and life context factors, such as supportive, goal-directed, and well-organized family and social settings, hold the key to stable remission and recovery (Moos, 2003; Moos et al., 1990).

Bill White: What dictates decisions to seek or not seek addiction treatment?

Dr. Moos: People with substance use problems are more likely to seek and enter treatment when they perceive their problems as being more severe, have more dependence symptoms, experience more adverse consequences as a result of substance misuse, have more depression symptoms, have lower self-esteem, experience more recent life stressors, and/or experience more stressors in diverse life domains. Facilitative factors also are important predictors of treatment entry. These include having sought help previously from sources other than treatment, such as clergy, an employer, or a self-help program, and, for those individuals who obtain detoxification services, receiving such services at a program that has treatment services available onsite. Overall, the perceived severity of a substance use problem plays a central role in the treatment entry process and explains the effects of many other personal and contextual factors in generating an impetus or readiness to enter treatment (Finney & Moos, 1995).

Conversely, some of the most important barriers to timely help-seeking involve individuals' perceptions that their problems are not severe and can

be managed by self-quit attempts, and that there are negative concomitants of treatment, such as stigma, lack of privacy and autonomy, and an emphasis on spirituality and abstinence. Easily accessible, low intensity interventions, such as those delivered by telephone, computer, and internet, hold some promise for addressing these issues by attracting individuals who might otherwise not seek help and by leading to reductions in substance use and, if needed, subsequent treatment entry.

Bill White: What characteristics of treatment environments are associated with elevated recovery outcomes?

Dr. Moos: Patients in supportive and well-organized programs that have moderate to high performance expectations tend to be more satisfied and self-confident and to participate more in program activities. In contrast, programs that lack support and organization tend to have high dropout rates. In general, aspects of the treatment environment that are associated with better in-program outcomes are also linked to better adaptation in the community. Specifically, cohesive programs that are relatively well-organized and emphasize personal growth—especially self-direction, skills development, and self-understanding—tend to improve patients' psychosocial functioning and community living skills (Moos, 1997).

The staff work environment also is an important part of the substance use treatment system. We found that substance use treatment staff members in supportive and goal-directed work environments were more likely to espouse disease model beliefs and a 12-step orientation toward treatment. These work environments were associated with more supportive and goal-directed treatment environments. Patients in these treatment environments were likely to participate in more substance use, educational, social, and family treatment services; were more involved in self-help group meetings, were more satisfied with treatment; improved more during treatment (as indicated by abstinence goals and confidence in maintaining abstinence, less depression, and more substance use and general coping skills); and were more likely to participate in outpatient mental health care after discharge (Moos & Moos, 1998).

Bill White: You were involved in studies of the relative effectiveness of cognitive behavioral and twelve-step facilitation treatments. What were the major findings of these studies?

Dr. Moos: We studied over 3,000 patients from 15 residential substance use treatment programs in the Department of Veterans Affairs (VA). On average, patients showed considerable improvement at 1-year, 2-year, and 5-year follow-ups. Patients in 12-step programs, compared to those in cognitive-behavioral (CB) and eclectic programs, were somewhat more likely to be abstinent and free of substance use problems at the 1-year follow-up, as were patients with more extended continuing outpatient mental health care and 12-step self-help group involvement. Consistent with their better 1-year outcomes, patients in 12-step programs improved more between intake and discharge than did CB patients on proximal outcomes assumed to be specific to 12-step treatment (e.g., disease model beliefs), and as much or more on proximal outcomes assumed to be specific to CB programs (e.g., self-efficacy and coping skills). These findings are consistent with the fact that we did not find any patient-program matching effects; that is, there was no evidence that 12-step or CB treatment was more beneficial for certain types of patients (Finney et al., 2001).

Potentially Harmful Effects of Treatment

Bill White: You are one of the few researchers to study the potential for harm in the name of help within the addiction treatment arena. Let's begin exploring this area by having you define the concept of iatrogenic illness.

Dr. Moos: I use the term "iatrogenic" in the classic sense of denoting harm that is induced by treatment itself. Evidence of potential iatrogenic effects of treatment is shown by patients who are worse off following treatment than before. With respect to psychosocial interventions, it is difficult to know whether adverse events, a temporary exacerbation of substance use and/or psychological symptoms, or general deterioration in a patient's condition are a direct consequence of treatment. Nevertheless, if we believe that treatment has curative power and contributes to patients' improvement, we must consider the real possibility that, at times, treatment may have iatrogenic effects and contribute to patients' deterioration.

Bill White: Based on your studies, how prevalent are such iatrogenic effects in addiction treatment?

Dr. Moos: In a review of relevant studies, we found that between 7% and 15% of patients who participate in psychosocial treatment for substance use disorders may be worse off subsequent to treatment than before. In addition,

several controlled trials of substance use prevention have shown some apparent iatrogenic effects, including more positive expectations about substance use and a rise in alcohol use and alcohol-related problems. Person-related predictors of deterioration associated with treatment appear to include younger age and unmarried status, more serious current diagnoses and substance use problems, and more psychiatric and interpersonal problems. Probable intervention-related predictors of deterioration include lack of bonding; lack of monitoring; confrontation, criticism, and high emotional arousal; modeling of substance use and aspects of deviant behavior; and stigma, low or inappropriate expectations, and lack of challenge (Moos, 2005; see also Ilgen & Moos, 2005, 2006; Moos et al., 2001).

Bill White: What actions can addiction professionals take to avoid such injuries to their patients?

Dr. Moos: Clinicians should be especially attentive to adverse effects when they employ high-risk treatment procedures, such as confrontation and personal criticism, or highly expressive and emotion arousing interventions, such as encouraging patients to re-experience personal traumas. These interventions may elicit sharp increases in anxiety and anger and an exacerbation of substance use and symptoms, especially among vulnerable and disturbed patients. More broadly, patient safety standards and monitoring procedures should be developed to routinely obtain information about specific adverse events (in addition to the intent to harm oneself and other people) and potential iatrogenic effects associated with psychosocial interventions, as is the practice for pharmacological treatment. We also need to consider potential adverse psychosocial outcomes of pharmacological treatments, such as an overdose of prescribed anti-depressants and psychological dependence on benzodiazepines.

Information obtained at treatment entry may be used to identify patients at high risk for deterioration and to allocate more intensive treatment to them. In this respect, we developed an index of risk factors to identify prospectively patients whose substance use symptoms exacerbate during or shortly after treatment and to identify characteristics of care that may reduce the likelihood of exacerbation. Risk factors for substance use symptom exacerbation included younger age, non-married status, residential instability, long-term use of drugs, prior arrests, prior alcohol treatment, alcohol and drug abuse or dependence diagnoses, cocaine abuse or

dependence, more severe self-rated drug problems, and psychiatric problems. High-risk patients who obtained a longer episode of mental health care were less likely to experience an exacerbation of symptoms. Thus, clinicians can identify at treatment entry patients whose substance use symptoms are likely to exacerbate and, by providing these patients a longer duration of care, possibly reduce the likelihood of symptom exacerbation (Moos et al., 2002).

Alcoholics Anonymous and other 12-Step Self-Help Groups

Bill White: The effects of participation in Alcoholics Anonymous on long-term recovery outcomes continue to be a subject of considerable scientific controversy, and yet the findings from your studies are fairly consistent on this question.

Dr. Moos: There may be less controversy now than in the past about the positive benefits of participation in AA and other 12-step self-help groups. In fact, there is remarkable generality in the association between participation in 12-step self-help groups and better substance use outcomes. This finding holds for individuals with alcohol and/or drug use disorders after inpatient treatment, day hospital treatment, and outpatient treatment, as well as for patients in continuing telephone care. It also holds for individuals who have both substance use and psychiatric disorders, and for women, youth, and older adults (Moos, 2008; Moos & Timko, 2008).

Another consistent finding is that individuals who continue to attend self-help groups over a longer interval are more likely to maintain abstinence than are individuals who stop attending. For example, our prospective study of individuals with alcohol use disorders showed that a longer duration of AA attendance in the first year after seeking help was associated with a higher likelihood of 1-year, 8-year, and 16-year abstinence. After controlling for the duration of AA attendance in year 1, the duration of attendance in years 2-3 and 4-8 was related to a higher likelihood of 16-year abstinence. Thus, individuals who continued to attend AA regularly over the long-term tended to experience better substance use outcomes than those who did not (Moos & Moos, 2006).

Several of these studies are prospective and have linked AA attendance to subsequent substance use outcomes. The one remaining controversy reflects the fact that individuals are not randomly assigned to

AA; thus, there is an element of self-selection involved in deciding to enter and continuing to attend AA. In theory, this means that individuals who attend AA, compared to those who do not, could have less severe substance use problems and be more motivated to change, and thus be more likely to improve independent of their participation in AA. In fact, however, individuals who attend AA tend to have more severe substance use problems than those who do not, which supports the idea that AA has a positive influence on its members (Humphreys et al., 1996).

Bill White: How do the effects of AA and treatment combined differ from their effects in isolation?

Dr. Moos: In general, participation in AA seems to confer more benefit than participation in treatment. Individuals who participate in treatment and AA do not appear to obtain much more long-term benefit than do individuals who participate only in AA. However, these conclusions are based on individuals who self-selected participation in treatment and/or AA. Moreover, many individuals find treatment more palatable than AA and either do not enter AA or drop out of AA. Accordingly, treatment is important for those individuals who choose it as the most suitable option for obtaining help (Moos et al., 2001; Moos & Moos, 2006).

Bill White: You and Keith Humphreys conducted one of the few studies of the cost-effectiveness of AA. What did you find in this study?

Dr. Moos: One of our studies examined differences in outcomes, alcoholism treatment utilization, and costs between individuals with alcohol use disorders and no prior treatment history who chose to attend AA or to seek help from a professional outpatient treatment provider. Over the three-year study, per-person treatment costs for the AA group were 45% (or $1,826) lower than were costs for the outpatient treatment group. Despite the lower costs, both 1-year and 3-year substance use outcomes for the AA group were comparable to those of the outpatient treatment group. These findings held even though at baseline, individuals who chose to attend AA had lower incomes and less education, and experienced more adverse consequences of drinking at baseline than did those who sought outpatient care, suggesting somewhat worse prognoses for the AA group. These findings suggest that voluntary participation in AA may significantly reduce professional treatment costs (Humphreys & Moos, 1996).

Another study evaluated whether, compared to patients in cognitive-behavioral (CB) programs, patients who were treated in 12-step programs—which more strongly emphasize participation in AA—relied less on professionally provided services and more on self-help groups after discharge, thereby reducing long-term health care costs. Compared with patients treated in CB programs, matched patients treated in 12-step programs were more involved in self-help groups at 1-year follow-up. In contrast, patients treated in CB programs averaged almost twice as many outpatient continuing care visits after discharge than did patients treated in 12-step programs, and they also received significantly more days of inpatient care, resulting in 64% higher annual costs in CB programs, or $4,279 per patient. Substance use and psychiatric outcomes were comparable across treatments, except that 12-step patients had higher rates of abstinence at 1-year follow-up. The findings were comparable at 2-year follow-up. Thus, professional treatment programs that emphasize self-help approaches appear to increase their patients' reliance on cost-free self-help groups and thereby lower subsequent health care costs (Humphreys & Moos, 2001, 2007).

Dropout from Treatment and AA

Bill White: You have also conducted studies that examined factors related to people dropping out of treatment and AA. What have you learned from these studies?

Dr. Moos: In studies of residential treatment, we found that programs that are low on involvement and support, do not emphasize patient personal growth—especially autonomy—and lack organization and clarity tend to have high patient dropout rates. These programs tend to lack direction, be unstructured, and have relatively few social activities and little emphasis on detailed planning of patients' activities. Overall, these programs lack support, goal direction, and structure (Moos, 1997).

In a more integrated approach to this issue, we used both pretreatment and treatment factors to predict dropout from residential substance use disorder programs to examine how the treatment environment modifies the risk for dropout. Patient baseline factors that predicted dropout included younger age, greater cognitive dysfunction, more drug use, and lower severity of alcohol dependence. Patients in treatment environments appraised as low in support or high in control also were more likely to drop out. Moreover, patients at high risk of dropout were especially likely to

dropout when treated in a highly controlling treatment environment. Thus, better screening of risk factors for dropout and efforts to create a less controlling treatment environment may result in increased retention in treatment (McKellar et al., 2006).

With respect to 12-step self-help groups, we found that 40% of patients who attended these groups had dropped out by 1-year follow-up. A number of patient characteristics at baseline predicted dropout, including less motivation to change, less belief in the disease model of addiction, less prior 12-step self-help involvement, and less social and religious involvement. Importantly, patients at high risk for dropout were less likely to drop out when they were treated in a more supportive environment. Clinicians may decrease the likelihood of dropout directly by screening for baseline risk factors for dropout and focusing facilitation efforts accordingly, and indirectly by increasing the supportiveness of the treatment environment and facilitating 12-step involvement during treatment (Kelly & Moos, 2003).

Alcohol Problems among Women

Bill White: In the early days of modern addiction treatment (1960s and 1970s), one could frequently hear comments about women entering treatment, noting how much "sicker" they were than male patients, how difficult they were to treat, and what a difficult time they had connecting to AA. You have devoted considerable time to the effects of gender on treatment outcome and AA affiliation and benefit. How have your findings challenged the traditional folk wisdom about women's response to treatment and their long-term recovery prognosis?

Dr. Moos: In a study of residential treatment, we found that women and men obtained similar treatment and showed comparable treatment outcome, but responded differently to specific treatment components. Participation in male-dominated therapy groups was related to better outcome for men as compared to women. This finding highlights the need for more individually oriented treatment options, special groups for women, and female group counselors in programs with mainly male counselors (Moos et al., 1990).

In a more recent study, we compared initially untreated women and men on their use of help and alcohol-related outcomes at 1-year, 8-year, and 16-year follow-ups. Women were generally worse off than men on baseline drinking and functioning indices. In keeping with their poorer baseline

status, women were more likely to participate in treatment and AA. Both women and men who participated in treatment and/or AA for a longer duration were more likely to achieve remission. Overall, compared to men, women with alcohol use disorders were more likely to obtain help and achieve remission; they also showed greater reductions in depression and avoidance coping. Moreover, women benefited somewhat more than did men from extended participation in AA, perhaps because of the emphasis on bonding with supportive peers to maintain abstinence. Thus, women appear to benefit from alcohol treatment and AA as much or more than men do (Moos, Moos, & Timko, 2006; Timko et al., 2002).

Alcohol Problems among Older Adults

Bill White: Your work has added substantially to the field's knowledge about alcohol problems among older adults. First, what have you found regarding the prevalence of such problems?

Dr. Moos: We have used standard guidelines (e.g., no more than 2 drinks per day and 7 drinks per week for women and no more than 3 drinks per day and 14 drinks per week for men) to identify patterns of high-risk alcohol consumption in a community sample of older women and men who were studied at baseline and followed 10 years and 20 years later. At 10 years, depending on the guideline, 23% to 50% of women and 29% to 45% of men engaged in potentially unsafe alcohol use patterns. The likelihood of risky alcohol use declined over the 10 years; however, individuals who consumed more drinks per week and/or per day were more likely to have alcohol use problems.

The likelihood of excessive drinking declined by the 20-year follow-up as adults matured into their 70s and 80s. However, at ages 75–85, 27% of women and 49% of men consumed more than two drinks per day or seven drinks per week. At comparable guideline levels of alcohol consumption, older men were more likely to have drinking problems than were older women. Consumption of more than two drinks per day or seven drinks per week was identified as a potential conservative guideline for specifying excessive drinking associated with an elevated likelihood of drinking problems. Accordingly, a substantial percentage of older adults who consume alcohol engage in guideline-defined excessive drinking and incur drinking problems. The finding that older men may be more likely than older women to experience problems when they drink beyond guideline

levels supports the conclusion that alcohol guidelines for men should not be set higher than those for women (Moos, Brennan et al., 2004; Moos et al., 2009).

Bill White: You have conducted long-term follow-up studies of older adults with alcohol problems. What have been your major findings on the course and outcome of these problems?

Dr. Moos: Older adults who had more friends who approved of drinking, relied on substances for tension reduction, and had more financial resources were more likely to engage in high-risk alcohol consumption and incur drinking problems at 10- and 20-year follow-ups. With respect to life history factors, drinking problems by age 50 were associated with a higher likelihood of late-life high-risk alcohol consumption and drinking problems; having tried to cut down on drinking and participation in AA were associated with a lower likelihood of high-risk consumption and problems (Moos, Schutte et al., 2010).

We also found that reliance on alcohol to reduce pain was associated with more alcohol consumption. Moreover, an individual's overall health burden and reliance on alcohol to reduce pain were associated with more drinking problems. In fact, reliance on alcohol to reduce pain strengthened the association between health burden, alcohol consumption, and drinking problems (Moos, Brennan, Schutte, & Moos, 2010a).

Another finding is that there are mutual influence processes in which older adults' social resources and high-risk alcohol consumption can alter each other. In this respect, there is evidence of both social causation and social selection processes in relation to high-risk alcohol consumption. In support of a social causation perspective, higher levels of some social factors, such as friends' approval of drinking, participation in social activities, and financial resources, were associated with an increased likelihood of high-risk alcohol consumption. In support of a social selection perspective, high-risk alcohol consumption was associated with subsequent higher levels of friends' approval of drinking (Moos, Brennan, Schutte, & Moos, 2010b).

We also found that about a third (30%) of an untreated group of late-life problem drinkers succeeded in attaining stable long-term remission. Being female, having more recent onset of drinking problems, fewer and less

severe drinking problems, friends who approved less of drinking, and drinking less and drinking less frequently predicted long-term remission. In many regards, these long-term remitted problem drinkers attained levels of functioning and life context similar to those of lifetime nonproblem drinkers. However, remitted problem drinkers continued to report more incipient drinking problems, depressive symptoms, health and financial stressors, psychoactive medication use, reliance on avoidance coping, and less social support from friends than did lifetime nonproblem drinkers. Thus, the functioning and life contexts of untreated remitted problem drinkers improved significantly, but there were still some remaining deficits (Schutte et al., 2001, 2009).

Late-life problem drinking can also affect spouses. Compared with spouses of problem-free individuals, spouses of older adults whose drinking problems later remitted reported more alcohol consumption, poorer health, more depressive symptoms, and less involvement in domestic tasks and social and religious activities. At 10-year follow-up, spouses of remitted problem drinkers were comparable to spouses of problem-free individuals, but spouses of continuing problem drinkers consumed more alcohol, incurred more alcohol-related consequences, and had friends who approved more of drinking. Overall, spouses whose friends approved more of drinking and whose partners consumed more alcohol and had drinking problems were likely to consume more alcohol and have drinking problems themselves. Thus, spouses of older adults whose late-life drinking problems remit can attain normal functioning; however, spouses of older adults with continuing late-life drinking problems experience some ongoing deficits (Moos, Brennan, Schutte, & Moos, 2010c).

Another issue of interest is the fate of late-middle-aged and older adults in substance use disorder treatment programs. We considered this issue by comparing late-middle-aged and older patients (55 years of age and older) with matched groups of younger (up to 34 years of age) and middle-aged (35-54 years) patients in residential programs. Older patients had positive views of the programs and, except for less family therapy and problem-focused counseling, received comparable treatment to that received by other patients. At discharge, older patients showed significant positive changes in most areas targeted for treatment. Patients who experienced more interpersonal support and who received more specialized treatment services showed better-than-expected improvement. The age groups showed

similar outcomes, prognostic factors, and response to different treatment orientations.

We also considered these patients' 1- and 5-year outcomes, use of continuing care services, and outcome predictors. Older patients had better outcomes than did young and middle-aged patients, but had comparable levels of continuing substance abuse care and 12-step self-help group involvement. Similar factors predicted outcomes across the age groups. Longer duration of continuing substance abuse care and greater self-help group involvement were related to better outcomes, as were patients' attitudes and coping strategies at program discharge. Overall, late-middle-aged and older patients with alcohol use disorders seem to respond to age-integrated substance use treatment programs at least as well as do younger patients and are equally involved in formal and informal continuing substance abuse care (Lemke & Moos, 2002, 2003).

Bill White: What things could addiction professionals do to improve the quality of their work with older adults?

Dr. Moos: As noted, specific late-life and life history factors can identify older adults likely to engage in excessive alcohol consumption 10 and 20 years later. Targeted screening that considers current alcohol consumption and life context, as well as history of drinking problems and help-seeking, could help identify older adults at higher risk for excessive or problematic drinking.

In addition, older adults who have more health problems and rely on alcohol to manage pain are at elevated risk for drinking problems. Health care providers can target high-risk older adults, such as those who drink to reduce pain, for screening and brief interventions to help them identify new ways to cope with pain and curtail their drinking. Older adults also may benefit from information about how social factors affect their drinking habits; accordingly, information about social causation effects could be used to guide effective prevention and intervention efforts aimed at reducing the risk that late-life social factors may amplify their excessive alcohol consumption.

Most generally, the predictors of high-risk drinking can help health care providers identify older individuals who may incur alcohol-related problems and select effective interventions for those who need help.

Interventions may involve educating older adults about how to avoid "triggers," such as specific social activities or interactions with friends associated with heavy drinking, and about how to handle urges and refuse drinks when "triggers" cannot be avoided.

Principles of Addiction Treatment and Recovery

Bill White: In recent years, you have tried to extract from your career a set of core principles that illuminate the active ingredients within the processes of successful addiction treatment and recovery. Could you highlight some of these principles for our readers?

Dr. Moos: I would like to summarize some of my earlier comments by highlighting three general principles based on my own work and that of other investigators (Moos, 2003).

Principle 1. *Treated or untreated, an addiction is not an island unto itself.*

People with addictive disorders exist in a complex web of social forces, not on an island unto themselves, free of social context. Formal treatment can be a compelling force for change, but it typically has only an ephemeral influence. In contrast, relatively stable factors in people's lives, such as informal help and ongoing social resources, tend to play a more enduring role. Moreover, a recovery that is sustained after treatment is not due simply to treatment; it is nurtured by the same sets of factors that maintain the resolution of problems without treatment.

This contextual perspective highlights the need for a fundamental shift in thinking about intervention programs and evaluating their effects. Many of the hard-won gains of intervention programs fade away over time. This is precisely as expected on the basis of our knowledge about environmental impact and the diversity of contexts to which individuals are exposed. An intervention program is but one of multiple life contexts. Other powerful environments also shape mood and behavior; ongoing environmental factors can augment or nullify the short-term influence of an intervention.

The fact that the evolving conditions of life play an essential role in the process of remission from addictive disorders is a hopeful sign. It implies that these disorders need not become chronic, that individuals who are able to establish and maintain relatively positive social contexts are

likely to recover, and that treatment directed toward improving individuals' life circumstances is likely to be helpful.

Principle 2. *Common dynamics underlie the process of problem resolution that occurs in formal treatment, informal care, and "natural" recovery.*

Individuals trying to resolve substance abuse problems usually begin by using one or more sources of informal help, such as a family member or friend, a physician or member of the clergy, or AA or another self-help group. If such attempts fail repeatedly, some individuals enter formal treatment. On average, these individuals have more severe problems and more difficult life contexts, and are more impaired than individuals who resolve problems on their own or with informal help; outside help may be especially needed when an individual has few personal or social resources on which to base a recovery.

Nevertheless, it may not be important or fruitful to distinguish between problem resolution that occurs with or without treatment. There is no compelling conceptual reason to distinguish between the influence of an AA sponsor, a spouse or partner, and a relative or friend versus that of a counselor or psychotherapist on an individual's substance use problems. The cognitive and social processes that underlie the resolution of addictive problems are common to formal treatment and informal help, and the other dynamics of change are likely to be similar, regardless of the context in which they occur.

In addition, any distinction between life context and informal help or formal treatment is arbitrary: when individuals enter an intervention program, it becomes part of their life context. Ongoing life settings and intervention programs are comparable in that both establish a context for individual development or dysfunction, both involve person–environment matching processes, and both may be altered by the participants they seek to alter. Moreover, both are environmental conditions that can be characterized by common social processes, as embodied by the quality of interpersonal relationships, the goals, and the structure of the setting.

Principle 3. *The duration and continuity of care are more closely related to treatment outcome than is the amount or intensity of care.*

Although patients with substance use disorders who receive more outpatient mental health care tend to have better short-term outcomes, there is growing evidence that the duration of care is more important than the amount of care. In a sample of more than 20,000 patients who participated in a nationwide program to monitor the quality of care in the Department of Veterans Affairs, we found that patients who had a longer episode of mental health care had better risk-adjusted substance use, family, and legal outcomes than did those who had a shorter episode. These findings held after the intensity of care was controlled. Drug-dependent patients with longer episodes of residential or outpatient care experience better substance use and crime-related outcomes than do patients with shorter episodes.

In other studies, we found that patients who obtained outpatient mental health care over a longer interval had better 1-year substance use outcomes and were more likely to be remitted at 2 years than were patients who had outpatient care for a shorter interval. The findings were comparable among patients from community-based residential settings; moreover, after the duration of outpatient mental health care was controlled, the amount of care did not independently predict 1-year outcomes.

The finding that the duration of treatment for alcohol and drug use disorders is more closely related to outcome than is the sheer amount of treatment is consistent with the fact that the enduring aspects of individuals' life contexts are associated with the recurrent course of remission and relapse. Thus, low-intensity, telephone-based case monitoring delivered by paraprofessional personnel may be an effective long-term treatment strategy for many patients.

My recent thinking in these areas has led me to speculate that comparable processes underlie successful treatment and self-help groups, as well as long-term recovery. In this vein, there are four related theories that specify common social processes that protect individuals from developing substance use disorders and may underlie effective psychosocial treatments for these disorders: social control theory, behavioral economics and behavioral choice theory, social learning theory, and stress and coping theory. These common social processes include (1) support, goal direction, and structure; (2) an emphasis on rewards that compete with substance use; (3) a focus on abstinence-oriented norms and models; and (4) attempts to develop self-efficacy and coping skills. I believe that effective psychosocial treatments for substance use disorders (such as motivational interviewing

and motivational enhancement therapy, 12-step facilitation treatment, cognitive behavioral treatment and behavioral family counseling, and contingency management and community reinforcement) incorporate these common processes (Moos, 2007a).

Moreover, I think that self-help groups incorporate these same active ingredients. Again, these active ingredients are bonding, goal direction, and structure (consistent with social control theory); the importance of abstinence-oriented norms and role models (consistent with social learning theory); an emphasis on involvement in rewarding activities other than substance use (consistent with behavioral economics and behavioral choice theory); and the building of self-efficacy and effective coping skills (consistent with stress and coping theory). A number of studies suggest that the emphasis on these active ingredients underlies some aspects of the effectiveness of self-help groups (Moos, 2008). In addition, these same active ingredients appear to underlie the process of stable remission and recovery (Moos, 2007b).

Breaking Multigenerational Addiction Cycles

Bill White: In 2000, you published a study with Christine Timko and Molly Kaplowitz in which you suggested the potential existence of an "ever worsening reciprocal relationship" between a mother's drinking and child dysfunction. This is the first study I am aware of noting that the untoward effects of parental drinking on children could in turn worsen the drinking of the parent in a continuing cycle. What lessons should treatment specialists draw from this finding?

Dr. Moos: More specifically, dealing with a child's ill health and a stressful mothering relationship is an upsetting and frustrating situation that may be associated with increases in drinking problem severity among mothers. In turn, mothers' drinking may be associated with children's injuries and psychosocial problems and be detrimental to child-parent relationships; these difficulties create more upset and frustration for the mother that serve as a further impetus to drink. On the brighter side, when children and child-mother dyads continue to function well despite the mother's drinking, such positive functioning may contribute to maternal recovery. Treatment specialists need to be aware of these potential "cascading" effects and be prepared to intervene to modify them (Timko et al., 2000).

Bill White: How do you feel we could best break the intergenerational transmission of alcohol and other drug problems? There are hundreds of studies on the pathology experienced by children of alcoholics and their increased developmental risk for also developing such problems, but you are one of the few researchers who has looked at the effects of parental recovery on the developmental trajectory and potential resilience of their children.

Dr. Moos: The key factors associated with protection from the intergenerational transmission of substance use problems are the same as those associated with successful treatment and long-term recovery. That is, to the extent that family members, peers, teachers, and other adults provide support, goal direction, and structure; model positive behavioral norms; reward participation in prosocial activities; and help build self-efficacy and coping skills, youngsters likely will refrain from substance misuse and other problem behaviors.

Bill White: Dr. Moos, thank you for participating in this interview, and thank you for all you have done for the field and for the individuals, families, and communities we serve.

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