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SECTION IIA. REPLICATION AND EXTENSION OF MARLATT'S TAXONOMY

Construct validation analyses on the Marlatt typology of relapse precipitants

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Abstract

Marlatt's typology of relapse precipitants has had a major influence on clinical research and practice in the substance use disorders. The purpose of this study was to evaluate the construct validity of the typology, which was done in several ways. First, precipitants of the relapse coded at the baseline assessment and for the first drink post-treatment admission were compared. In addition, baseline relapse precipitants were compared with the highest factor scores recorded in the baseline Inventory of Drinking Situations data. A third set of analyses concerned the relationship among Marlatt precipitant codes, psychiatric diagnoses, and Alcohol Dependence Scale scores. The subjects were 142 men and women who were recruited for this study upon their admission to inpatient or outpatient alcohol treatment programs. Participants completed a baseline assessment covering substance use, including information on the precipitants of a pretreatment "relapse", and other areas of functioning. Subjects then completed bimonthly follow-up assessments during the course of 1 year. The results showed support for only one of the predictions regarding the construct validity of the Marlatt typology. Possible explanations for these findings and their implications for clinical research and practice are discussed.

Introduction

The process and prevention of relapse are considered to be of the highest priority for clinical research on the substance use disorders. For example, Rounsaville (1986) argued that "relapse and relapse prevention define the major clinical problems to be faced by clinicians and clinical researchers who do work with substance abusers" (p. 172). Despite its importance to addictions clinicians and researchers, little systematic attention was paid to relapse until the mid 1970s. At that time, Alan Marlatt and his colleagues published their initial cognitive–behavioral model of relapse that has greatly stimulated systematic research and clinical activity on relapse (see summaries by Marlatt & Gordon, 1985, and Marlatt, this issue). Of particular heuristic value from this early work was the typology of relapse precipitants. Marlatt's typology consisted of subcategories of intrapersonal and interpersonal determinants of the first drink following a period of abstinence that was initiated through participation in inpatient alcoholism treatment. This relapse typology was

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developed from male patients' responses to open-ended questions about the events leading to their first drink.

The present Research Institute on Addictions (RIA) study, part of a multi-site Relapse Replication and Extension Project (described by Lowman *et al.*, this issue), addresses several central questions about the typology that have received little or no systematic empirical study despite the major influences that the Marlatt typology has had on alcohol (and other drug) treatment practice and research. Among the major questions about the Marlatt typology that have not been addressed is its construct validity. In psychometric theory, construct validity traditionally has referred to the degree to which an instrument or some procedure of operations measures some psychological concept (e.g. Aiken, 1994). In applying the idea of construct validity to evaluation of the Marlatt typology, it would refer to the degree to which the typology and the procedures used to operationalize it reflect relapse precipitants in a way that would be expected from the cognitive–behavioral theory underlying the typology's creation. Evaluation of the typology's construct validity would advance the study of alcohol relapse through evaluation of the assumptions on which the content and operations of the typology are based, as well as its integration with cognitive–behavioral theory. In those ways, findings emerging from use of the typology in clinical and research activities could be interpreted in more generative and scientifically productive ways than now are possible.

There is no single way to evaluate a measure's construct validity. Indeed, in its standards on psychological testing, the American Psychological Association (1985) has argued that what usually are considered different "types" of validity all are relevant to construct validity. Along these lines, evidence pertinent to what typically is called content and criterion-related validity (the latter may be defined further as predictive or concurrent validity) is relevant to construct validity. Therefore, evidence for a measure's construct validity accumulates over time as a function of implementing diverse research designs. As a measure's construct validity is evaluated, the theoretical framework in which the measure resides typically is refined as well.

In this study, initial evidence for the construct validity of the Marlatt typology was evaluated in several ways. First, baseline Marlatt codes and the Marlatt codes for the first drink post-treatment admission were cross-tabulated. In this analysis of predictive validity it was reasoned that, since the hypothesized relapse precipitants are purported to represent extensive learning histories with alcohol in these adult patients, there should be at least a moderate degree of consistency in the precipitants reported for the baseline relapse and for the first drink post-treatment admission. The relationship between precipitants of the baseline relapse and the first drink post-admission was investigated because of the potential utility of such information for treatment planning. Similarly, it was expected that baseline Marlatt codes would predict first drink codes when analyzed from a multiple regression framework. This line of reasoning again was used in a concurrent validity analysis comparing baseline relapse Marlatt codes and baseline Inventory of Drinking Situations (IDS) highest factor scores. A significant degree of consistency between the measures was expected, since the IDS was derived directly from the Marlatt typology (Annis, 1986), and its individual factors are hypothesized to reflect direct experience with alcohol.

The next predictions concerned the relationship between Marlatt codes and DSM psychiatric diagnosis and Alcohol Dependence Scale (ADS) scores. ADS scores were expected to be related to the presence of Marlatt codes reflecting testing personal control (as an individual who has experienced an apparent inability to regulate his or her alcohol use might be inclined to do) and giving in to temptation and urges both for the baseline relapse (concurrent validity) and for the first drink (predictive validity). Of course, impaired control over alcohol use and strong urges and temptations to drink are considered features of the alcohol dependence syndrome (e.g. Skinner & Allen, 1982). Finally, the presence of an anxiety or affective disorder diagnosis at baseline was predicted to be associated with Marlatt baseline and first drink codes relevant to unpleasant affect. The reasoning behind this prediction was that these diagnoses reflect stable and pervasive clusters of mood and behavioral features in individuals, which are likely to influence patterns of drinking alcohol. The Marlatt precipitant dimensions potentially could reflect such a hypothesized relationship between diagnosis and drinking pattern.

In summary, this initial construct validity

study was based on several premises, the first of which is that the Marlatt typology reflects primarily acquired associations between different events internal and external to the individual, and alcohol use. As such, an individual's identification of a precipitant of a relapse event by use of the Marlatt coding system should be positively associated with precipitants identified with other measures of drinking antecedents. Identification of a relapse precipitant also should reflect predominant moods or behavioral styles that might be modified by alcohol use. Moreover, the idea that drinking antecedents are acquired over the course of a drinking career in adults suggests that antecedents are relatively stable and therefore predictive of antecedents of future drinking situations.

Method

Subjects

Participants were 142 clients recruited from alcoholism treatment programs in the Buffalo, New York, metropolitan area. The sample included 77 men (54%) and 65 women (46%). Seventy-eight per cent (110) were inpatients and 22% (32) outpatients at the point of recruitment. Fifty-four per cent identified themselves as white, 38% as African American, and 8% as Hispanic, Native American, or belonging to more than one ethnic group.

The average age of the participants was 34.0 years (SD = 8.0). Most (63%) had graduated from high school, and the average length of education was 12.3 years (SD = 2.0). In terms of marital status, the sample was divided between never married (37%), currently married (30%), and separated or divorced (29%). The remaining 4% were widowed. Most of the sample was unemployed (59%) or working full time (29%). The remainder worked part time (6%) or were homemakers (6%).

Participants reported experiencing alcohol problems for an average of 11.2 years (SD = 7.2). The average score on the Michigan Alcoholism Screening Test (Selzer, 1971) was 31.8 (SD = 6.9). Most subjects (97%) reported at least one previous serious attempt to quit drinking (median = 3 attempts). The majority had attended at least one Alcoholics Anonymous or other 12-Step meeting (90%), had been hospitalized for medical reasons (80%), and had been incarcerated (59%). Most had previously undergone detoxification (64%) or alcohol treatment (80%). Fewer than half of the study participants had received previous drug treatment (22%) or psychological treatment (40%).

General procedures

The Diagnostic Interview Schedule for DSM-III-R (DIS-R; Robins *et al.*, 1988) was used to determine that all participants met DSM-III-R criteria for alcohol abuse or dependence. The DIS-R and the treatment setting's psychiatric evaluation were used to screen out participants with certain psychiatric disorders (e.g. organic brain syndrome, schizophrenia) and gross intellectual impairment. Additional eligibility criteria are described by Lowman *et al.* (this issue). All clients provided their written informed consent to participate.

Following intake to treatment and preliminary screening, subjects were invited to participate in the study. They were told that the study involved bimonthly contacts to monitor the course of their functioning, including alcohol and drug use. For inpatients, baseline measures were administered at the respective treatment sites. When subjects were outpatients, the baseline interviews generally were completed at the research facility within 7–10 days of treatment entry.

Detailed telephone follow-up assessments were conducted bimonthly for the next 12 months, except at months 6 and 12, when in-person assessments were conducted. Immediately prior to the 6- and 12-month interviews, questionnaires packets were mailed to subjects for them to complete and return. Subject remuneration was provided for each contact.

Measures

Following are measures administered in this study that are pertinent to the aims of the present report.

Form 90 drinking measure (Miller, 1995). The Form 90 measure was used at baseline to gather information on daily alcohol consumption in the 90 days prior to treatment admission. The Form 90 was modified to cover the 60 days constituting the bimonthly follow-up interviews. The Form 90 also was used to assess life-time and recent drug use, the number of days of inpatient

alcohol treatment, other substance abuse or psychological treatment received, and attendance at 12-Step self-help groups during each assessment interval.

Brief drinker profile (Miller & Marlatt, 1984). This structured interview was modified to assess the subject's history and current status regarding alcohol use and problems. It covers a broad range of relevant information including demographics, family and employment status, alcohol use history, motivation for drinking and treatment and family drinking history.

Diagnostic Interview Schedule (DIS). The DIS-R (Robins *et al.*, 1988) was used to establish a DSM-III-R diagnosis of alcohol abuse or dependence. In addition, the RIA study used the DIS to identify other drug use disorders, antisocial personality, and Axis I diagnoses other than substance use disorders. The other Axis I diagnoses assessed were anorexia, bulimia, major depression, dysthymia, panic disorder, phobia, post-traumatic stress disorder and general anxiety disorder.

Alcohol Dependence Scale (ADS). The ADS (Skinner & Allen, 1982) was used to assess the alcohol dependence syndrome.

Drinking and Craving Questionnaire (DCQ) (Ludwig & Stark, 1974). The RIA study used the DCQ to assess qualitative and quantitative features of craving. The measure includes a 10-item craving experiences scale to tap such features of craving as feeling a need to drink, thinking about drinking, and "desperate" feelings for alcohol.

Drinker Inventory of Consequences (DrInC) (Miller, Tonigan & Longabaugh, 1995). The DrInC was used to assess drinking-related consequences life-time, during the 6 months preceding treatment entry, and at the 6- and 12-month follow-ups.

Inventory of Drinking Situations (IDS) (Annis, 1986). The IDS (in short form) is a 42-item questionnaire which assesses situations in which a client drinks heavily. The questionnaire is based on Marlatt and colleagues' (e.g. Marlatt & Gordon, 1980) research on relapse situations.

Relapse Interview (RI). This interview replicates the questions and procedures used by Marlatt and colleagues in their original investigations of relapse (e.g. Marlatt & Gordon, 1980). It was administered at baseline and at each follow-up interview. At baseline, these open-ended, retrospective RI questions were asked about the most recent pretreatment relapse. The onset of the most recent relapse was operationalized as a drinking period following at least 4 days of abstinence, that included at least 1 day in which the subject's blood alcohol concentration was estimated to be at least 0.10% (calculation based on gender, weight, and amount consumed). For the follow-ups, these questions were asked for the *first drink* and the *first relapse* following 4 days of abstinence. For the purposes of this study, relapse was defined as a drinking period containing at least 1 day of heavy drinking, which is preceded by at least 4 consecutive days of abstinence from alcohol. Heavy drinking was defined as consuming enough standard drinks to achieve an estimated BAC of 0.10% as determined by gender and weight.

Categorization of responses to the relapse questions was performed by trained raters who used the guidelines provided elsewhere for the Marlatt relapse taxonomy (Marlatt & Gordon, 1980).

Reasons For Drinking Questionnaire (RFDQ). Heather, Stallard & Tebbutt (1991) developed a rating scale alternative to the Marlatt & Gordon (1985) coding classification system. These investigators transformed the 13 Marlatt categories of relapse into a self-report questionnaire measure. The Heather *et al.* research was extended to alcohol relapse in this study by use of the RFDQ, which is the Heather et al. measure adapted to assess relapses to alcohol rather than heroin (see Zywiak *et al.*, this issue).

For further information on the Form 90, ADS, IDS, and RI, and for discussion on steps taken to maximize the validity of self-reported drinking data, see Lowman *et al.* (1996, this issue).

Results

Preliminary analyses

As indicated below, the number of subjects involved in each analysis reported differed according to the number of subjects who provided valid data for the measures involved in an analysis. In

Table 1. *Eight Marlatt relapse precipitant categories and distribution of subjects' perceived relapse precipitants for their first drink post-treatment admission*

Category	*n*	Percentage of subjects who drank
Intrapersonal		
Coping with negative emotional states (1A)	32	37.2
Coping with negative physical states (1B)	1	1.2
Enhancement of positive emotional states (1C)	6	7.0
Testing personal control (1D)	8	9.3
Giving in to temptations or urges (1E)	9	10.5
Interpersonal		
Coping with interpersonal conflict (2A)	10	11.6
Social pressure (2B)	15	17.4
Enhancement of positive emotional states (2C)	5	5.8
N who drank	86	100.0

Designations in parentheses following category names will be used as abbreviated terms for the respective categories.

the case of the self-administered questionnaires, if information was missing it was replaced according to the following procedures. For a given instrument, a subject must have had $\leqslant 13\%$ of the item-level data missing for the data to be considered complete. For the missing items in those cases, the subject's mean item score from the completed items was substituted for the missing items. If the subject was missing $> 13\%$ of the information on an instrument, then he or she was assigned the mean total score for that instrument from the rest of the subject sample.

The baseline and follow-up drinking variables described below were operationalized and derived from the Form 90. All variables included in this report were checked for marked deviations from normality. "Deviation" was defined as a kurtosis value $\geqslant 3.5$. Only one variable, baseline number of drinks per drinking day, met this criterion. A square root transformation was performed on those data so that the distribution more closely approximated normal.

The rates of follow-up data collection were as follows for the months 2, 4, 6, 8, 10 and 12 follow-ups: 94%, 93%, 88%, 87%, 87% and 82%, respectively. The percentages of subjects maintaining abstinence from alcohol at the 2, 4, 6, 8, 10 and 12-month follow-ups were 68%, 58%, 46%, 39%, 35% and 33%, respectively. The mean and median number of days to first drink among subjects who reported they used alcohol during the follow-up period were 98 and 63, respectively.

Reliability of Marlatt coding system

Extensive intersite reliability studies of the Marlatt taxonomy codes were conducted as part of the overall study, based on subjects' reports for their baseline relapses. Based on considerations of utility or amount of detail of information and interrater reliability, the "Level 2" or 8-category system used in this report was deemed most acceptable. The overall interrater reliability for this version of the taxonomy was 74%, with no category except coping with physical states (1B) having an agreement rate $< 60\%$. Note that for the first post-treatment drink this precipitant category was reported by only one subject. Table 1 presents a listing of the eight categories and the distribution of subjects' perceived precipitants for their first drink after treatment admission.

Cross-classification of Marlatt codes

The first set of construct validation analyses concerned a cross classification of the frequencies of occurrence of Marlatt codes. The first analysis in the set involved a cross-tabulation of the code assigned for the baseline relapse and that assigned for the first drink following treatment admission, if one occurred. In this analysis the code "coping with negative physical states" (1B) was excluded, as no subject was assigned that code for the baseline relapse. Table 2 presents the distribution of data for the 80 subjects who were included in this analysis. A χ^2 test of independence was conducted on these data and

Table 2. *Distribution of Marlatt coding of subjects' responses for baseline relapse and first drink post-treatment admission* (n = *80*)

	First drink code							
BL code	1A	1C	1D	1E	2A	2B	2C	T
1A	17	1	3	3	3	6	5	38
1C	2	1	1	1	0	1	0	6
1D	2	0	0	0	1	0	0	3
1E	1	1	1	3	2	4	0	12
2A	5	2	0	2	1	0	0	10
2B	3	0	2	0	1	2	0	8
2C	0	1	0	0	1	1	0	3
T	30	6	7	9	9	14	5	80

Code designations are abbreviated terms. Code 1B was deleted from the analysis because no subject was assigned this code for the baseline relapse. In this scheme, 1A = coping with negative emotional states; 1B = coping with negative physical states; 1C = enhancing positive emotional states (intrapersonal); 1D = testing personal control; 1E = giving in to temptations and urges; 2A = coping with interpersonal conflict; 2B = social pressure; 2C = enhancement of positive emotional states (interpersonal).

revealed no significant relationship between the baseline and first drink codings.

Because of the considerable number of cells in the full 7 × 7 matrix (Table 2) that had extremely low expected frequencies or that had zero frequency, a method of collapsing across categories for more sensitive analysis was sought. Cannon *et al.* (1990) provided one solution to this problem. They conducted a principal components analysis of the Inventory of Drinking Situations (IDS) responses of 336 male inpatient alcoholics and derived three factors. The IDS originally was designed to have eight factors isomorphic to the Marlatt taxonomy. Of course, that 8-category version of the taxonomy was used in this study. Accordingly, we adopted the Cannon *et al.* solution and applied it in the cross-tabulations reported here. In the Cannon *et al* classification, Category 1 = Intrapersonal and Interpersonal Emotions (Marlatt codes 1A and 2A); Category 2 = Positive Emotions and Social Pressure (Marlatt codes 1C, 2B and 2C); and Category 3 = Testing Personal Control (Marlatt Code 1D).

Table 3 presents a cross-tabulation of Marlatt baseline and first drink codings frequencies collapsed according to the Cannon *et al.* system. A total of 62 subjects were included in this tabulation. A χ^2 test of independence was performed on the data and was not statistically significant.

Cross-classification of baseline Marlatt codes and baseline IDS highest factor score

This analysis involved the cross-classification of the frequency of baseline Marlatt codes with the frequency of occurrence of each IDS factor as the highest factor score according to subjects' baseline reports. Both the Marlatt codes and the IDS factors were redefined according to the Cannon *et al.* (1990) system. In defining an IDS factor as the highest among the eight factors, ties were broken by selection of the factor earlier (1 = "earliest", 8 = "latest") in order (factor 1 = negative emotional states, factor 2 = negative physical states, factor 3 = positive emotional states [intrapersonal], factor 4 = testing personal

Table 3. *Cross-tabulation of frequencies of baseline and first drink Marlatt codes, redefined according to Cannon* et al. *(1990)* (n = *62*)

	First drink code			
Baseline code	1	2	3	T
1	26	14	3	43
2	7	6	3	16
3	3	0	0	3
T	36	20	6	62

Code 1 = intrapersonal and interpersonal emotions; 2 = positive emotions and social pressure; 3 = testing personal control.

Table 4. *Cross-tabulation of frequencies of baseline Marlatt codes and highest baseline IDS factor, redefined according to Cannon* et al. *(1990)* (n = 97)

	Baseline IDS code			
Baseline Marlatt code	1	2	3	T
1	25	31	9	65
2	3	21	3	27
3	0	2	3	5
T	28	54	15	97

Code 1 = intrapersonal and interpersonal emotions; 2 = positive emotions and social pressure; 3 = testing personal control.

control, factor 5 = temptations or urges, factor 6 = interpersonal conflict, factor 7 = social pressure, factor 8 = positive emotional states [interpersonal]).

Table 4 presents a cross-classification of the frequencies for the baseline Marlatt and IDS codes according to the Cannon *et al.* (1990) system. A total of 97 subjects provided data valid for both measures and thus were included in the cross-classification. A χ^2 test of independence was conducted on the data and was statistically significant, χ^2 (4) = 16.65, $p < 0.01$, $\phi = 0.41$. Therefore, there is a significant association between the frequencies of baseline Marlatt codes and of the baseline IDS highest factor score, with a collapsing of the codes according to the Cannon *et al.* system. Table 4 shows that there was the greatest degree of consistency between the baseline Marlatt and IDS baseline data for the no. 2 code, or positive emotions and social pressure.

Prediction of dependence and psychiatric diagnosis by Marlatt codes

The first of these analyses concerned prediction of scores on the baseline Alcohol Dependence Scale (ADS) by relevant baseline Marlatt codes. In this analysis, subjects who did ($n = 20$) or did not ($n = 106$) have a baseline Marlatt code considered theoretically most relevant to dependence as measured by the ADS (i.e. codes 1D, testing personal control, or 1E, giving in to temptations or urges) were compared on their baseline ADS scores. The analysis showed no significant differences between the two Marlatt code groups ($t(124) = 0.56$, $p > 0.25$). Similarly, baseline ADS score did not predict the occurrence of first drink Marlatt codes of 1D or 1E, $t(82) = 0.40$, $p > 0.25$.

The next analyses concerned predictions of baseline and first drink Marlatt codes from baseline affective or anxiety disorder DSM-III-R diagnoses. It was expected that the presence of such diagnoses would be associated with a disproportionately high frequency of negative affect (1A or 2A) Marlatt codes, and a disproportionately low frequency of positive affect codes (1C or 2C). In these analyses, the diagnoses considered were panic disorder, general anxiety disorder, post-traumatic stress disorder, major depression and dysthymia. A series of χ^2 tests of independence was conducted between each of the diagnostic classifications (frequencies of present or absent) and the frequencies of the presence or absence of the Marlatt code in question. The same analyses were performed for the baseline and first drink Marlatt codes. None of these χ^2 tests was statistically significant.

Discussion

The results of this study showed support for only one of the hypothesized predictions regarding the construct validity of the Marlatt 8-category typology. The frequencies of baseline Marlatt codes and IDS highest factor scores at baseline, both redefined according to Cannon *et al.* (1990), were significantly associated. There are, of course, numerous possible explanations of the general failure to find support for the predictions of this study besides a lack of construct validity of the Marlatt typology. Perhaps the most straightforward explanation is that the validity of the typology was limited by its reliability. As Longabaugh *et al.* (this issue) reported, the inter-rater reliability of the Marlatt typology in this study was modest.

Another hypothesis is that the baseline relapse, which was central to the analyses reported in this paper, was not a relapse as it is typically defined. Therefore, any distribution of precipitant frequencies based on such an event would not be a sensitive indicator in evaluation of a relapse precipitant typology's construct validity. It may be that a number of subjects were not making a concerted effort to change their drinking patterns during the period they reported as part of the baseline assessment that the relapse had occurred. Along these lines, it generally has been

accepted among researchers and clinicians alike that the occurrence of a relapse (or lapse) involves the return to a behavior pattern to some degree that the individual has been making an effort to modify (e.g. Brownell *et al.*, 1986). It is possible that subjects' commitment to change their drinking behavior during the follow-up, when the first drink taxonomy was derived, would tend to be stronger than it was during the period when the baseline relapse was reported to have occurred.

One piece of evidence that helps to evaluate the plausibility of the baseline relapse explanation of a lack of findings involves analyses reported by Connors *et al.* (this issue). They found that baseline relapse reasons for drinking (RFDQ) scores were highly predictive of the score for the corresponding determinant at the occurrence of the first drink. This suggests that method of measurement, as the RFDQ determinants are assigned a continuous score and the scoring system allows more than one determinant for a relapse event, may account in part for the lack of predictive value in the Marlatt codes observed in this study.

More general methodological points that could account at least in part for the findings of this study have been presented by Donovan (this issue) in his discussion of the Relapse Replication and Extension Project. Two of Donovan's suggestions seem important for design of future evaluations of the validity of the Marlatt typology. In summary, the first hypothesis is that individuals have a "hierarchy" of high-risk situations. According to this idea, the precipitant of one relapse event, particularly as encoded by the Marlatt typology, may reflect only one of several (or more) situations that are "high risk" for alcohol consumption for an individual. Therefore, using one precipitant of one relapse event to predict the precipitant(s) of a future relapse event is not likely to be powerful. Instead, a "profile" of past relapse events might be more predictive of the precipitants of future relapses.

Another general point Donovan (this issue) raised that might be relevant to the findings of this study is the importance of taking into account base rates of exposure to situations to determine more sensitively how "high risk" they are for an individual. More specifically, it seems important to know the ratio of the frequency of drinking heavily in a situation to the frequency of exposure to that same situation to derive a more sensitive index of the degree of risk that it poses for a person. The result of failure to take into account base rates is that predicting future relapse precipitants or related features of relapse events from knowledge of the precipitants of past relapses would tend to lack sensitivity. For example, if the "predictor" relapse occurred in a situation that the individual rarely faces, it would be unlikely just from knowledge of situation occurrence base rates that the next relapse the individual experiences would have the same precipitants.

In conclusion, the analyses reported in this paper generally do not provide evidence for the construct validity of the Marlatt typology. These findings are consistent with Stout *et al.*'s (this issue) predictive validity data obtained as part of this same multisite study of relapse. However, as indicated above, more sensitive designs may yield more positive findings in future research on the validity of the Marlatt typology. Until such studies are completed, the typology is best considered an extremely valuable clinical tool, as shown by its widespread treatment application.

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