Feelings About Drug Use

Drug-Related Locus of Control

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Introduction

Locus of control is one of the most extensively investigated constructs in psychological and social science literature (Carton & Nowicki, 1994; Rotter, 1990) and of potential use for substance abuse researchers and treatment practitioners. The Drug-Related Locus of Control scale is a 15-item, forced-choice measure of drug-use control expectancies in a variety of drug-use-related situations.

Locus of Control Theory

Locus of control refers to internal states that explain why people actively deal with difficult circumstances. It concerns the beliefs that individuals hold regarding the relationships between action and outcome (Rotter, 1990; Lefcourt, 1991). Locus of control originated with Rotter's social learning theory (Rotter, 1966). He defines internal versus external control as "the degree to which persons expect that a reinforcement or an outcome of their behavior is contingent on their own behavior or personal characteristics versus the degree to which persons expect that reinforcement is a function of chance, luck or fate, is under the control of powerful others, or is simply unpredictable" (1990, p. 489). Thus, for some individuals, outcomes are experienced as being dependent on the effort expended in their pursuit (internal control). Others experience outcomes as being the result of external or impersonal forces such as luck, prayer, fate, or powerful others (external control) (Lefcourt, 1991).

Researchers have found that an internal locus of control is associated with a more active pursuit of goals, such as social action, more spontaneous engagement in achievement activities, better interpersonal relationships, better emotional adjustment, a sense of well-being, and higher levels of performance, information seeking, alertness, and autonomous decision making. A more external locus of control is associated with depression, anxiety, and a lesser ability to cope with stressful life experiences (Carton & Nowicki, 1994; Crandall & Crandall, 1983; Lefcourt, 1991).

Locus of Control Instrumentation

The first commonly used LOC scale was developed by Rotter in 1966. Called the Internal-External Locus of Control Scale (I-E), both it (Rotter, 1966), and the later Adult Nowicki-Strickland Internal-External Control Scale (Nowicki & Duke, 1974, 1983), have been widely used and measure

generalized locus of control. However, one consistent criticism of the instrumentation of early LOC research is that LOC was treated as a unidimensional construct (Rotter, 1975; Lefcourt, 1982, 1991). As a result of this criticism, researchers have taken two approaches: (1) create multidimensional instruments, for example the Internality, Powerful Others, and Chance Scales (Levenson,1981) and the Multidimensional Health Locus of Control Scale (Wallston & Wallston, 1981); and (2) create instruments targeted toward specific aspects of control, such as, the Marital Locus of Control Scale (Miller et al., 1983) and the Mental Health Locus of Control Scale (Hill & Bale, 1980). According to Lefcourt (1991), maximal predictions are best obtained if the researcher tailors his or her measures to particular populations and their concerns rather than relying on more global and less targeted measures. This is supported by Abbott's (1984) findings that Keyson and Janda's (1972; Donovan & O'Leary, 1978) Drinking Related Internal-External Locus of Control scale (DRIE) was more predictive of treatment outcome for alcoholics than Rotter's more generalized I-E scale. We chose to follow this approach by developing an instrument targeted toward a specific dimension of control, drug abuse.

LOC, Substance Abuse, and Treatment

Drug abuse often develops into a chronic, relapsing condition that is resistant to treatment (Anglin, 1988; Gerstein & Harwood, 1990; Hser, Anglin, & Powers, 1993; Maddux & Desmond, 1981; Simpson & Sells, 1990; Vaillant, 1988). Treatment success and relapse among drug abusers have been studied extensively (Brewer, et al., 1998; Hubbard, Craddock, Flynn, Anderson & Etheridge, 1997; Fletcher, Tims & Brown, 1997; Prendergast, Podus, & Chang, 1998; Simpson, Savage, & Lloyd, 1979). Some clear predictors of relapse have emerged, however, most are gross measures of a client's demographic status, psychiatric status, or program attendance. For instance, a

recent meta-analysis of treatment for opiate addicts shows that unemployment, high levels of use, no prior abstinence, depression, association with drug-using peers, short treatment duration, and leaving treatment prior to completion are predictive of relapse (Brewer, et al., 1998). Longer treatment participation and participation in aftercare has been shown to improve relapse rates (Hubbard, et al., 1997; Miller, et al, 1997). Drug-related locus of control has the potential to be a more serviceable predictor to the field because it goes beyond general labels and is possibly modifiable through treatment (Abbott, 1984).

Although locus of control is one of the most extensively investigated constructs in psychological and social science literature (Carton & Nowicki, 1994; Rotter, 1990), its use by substance abuse researchers has been limited. Most of the substance abuse research on LOC that does exist is hampered by sample sizes of under 100 and often under 50 (Canton, et al., 1988; Cohen, et al., 1982; Figurelli, et al., 1994; Hunter, 1994; Johnson, et al., 1991; Jones, 1985; Nurco, et al., 1995; Obitz & Oziel, 1978; O'Leary, et al., 1976; Oswald, et al., 1992; Walker, et al., 1980; and Weidman, 1983). The larger studies show: a significant correlation between internal locus of control and greater personal treatment motivation (Murphy & Bentall, 1992); no relationship between 12-step spiritual beliefs and an external locus of control over drug use (Christo & Franey, 1995); a significant correlation between a more internal locus of control and abstinence during the study period (Sadava, 1986); significant shifts toward an internal locus of control during treatment (Abbott, 1984; Walker, et al., 1979); significant differences in six-month outcomes clearly favoring those with internal DRIE scores (Koski-Jannes, 1994); and that among children of alcoholics, external orientation was significantly and positively correlated with having a parent who drank heavily and scores on the Beck Depression Inventory and significantly and negatively correlated

with the Rosenberg Self-Esteem Inventory and the Possible Self Quetionnaire (McNeill & Gilbert, 1991).

Developing the Drug-Related Locus of Control (DRLOC) Scale

Our aim in modifying the Drinking-Related Locus of Control Scale (Keyson & Janda, 1972) was to create a shorter scale with a higher Alpha reliability applicable to a drug-abusing population. To achieve this, we selected only those items in Donovan and O'Leary's (1978) analysis having significant factor loadings. We then modified the items, replacing references to "alcohol" and "drinking" with "drugs" and "using drugs." The result was 15 forced-choice items in which subjects chose between internal and external alternatives, such as, "When I am at a party where others are using, I can avoid taking drugs," or "It is impossible for me to resist drugs if I am at a party where others are using."

Our aims were to: (1) to develop a locus of control instrument focusing on drug abuse for use among drug abusers, and (2) to examine the relationship between locus of control and related concepts such as self-esteem.

Method

This study was conducted as part of a larger study of the drug treatment process and drug treatment counselor practices and effectiveness (Hser, 1995; Kasarabada et al., 2001).

Setting

As part of a larger study on drug treatment process, drug treatment clients were interviewed by trained interviewers at 19 drug, or drug and alcohol treatment facilities throughout Los Angeles

County. Five treatment modalities were represented: 9 outpatient, 4 residential, 2 day treatment, 2 inpatient, and 2 methadone programs. The sample was stratified so that the number of programs in each modality would be proportional to their representation in Los Angeles County's treatment milieu. Within each modality, the programs were randomly selected. Program philosophy and length of treatment varied considerably among programs.

Subjects

Study participants were current clients drawn from all of the 19 treatment programs. In programs with large numbers of clients and counselors, we randomly selected counselors and clients so that we would achieve a total of approximately 30 clients per program with at least 5 clients per counselor. In programs with 30 or fewer clients, we selected all clients for participation and as new clients were admitted, we added them to the sample until we reached 30 clients per program.

Using the selection criteria above, we recruited 565 clients and had 101 refusals (15%). Only those clients who completed at least 12 of the 15 items were included in the analysis. This reduced the *n* to 553. Slightly over half the sample was female (54.2%). The majority of clients were either white (41.1%) or African-American (32.2%). Nearly a fifth were Latino (18.6%), with the remaining clients being Asian/Pacific Islanders (4.4%), multi-racial (2.3%), or other (1.3%). Only one client declined to state ethnic background (.2%). Clients' mean age was 36.2 years (SD 9.58) and their mean years of education was 12.2 years (SD 2.47, range of 5 to 26 years). At the time of interview, a high proportion of clients (73.1%) were not in a committed relationship (neither married nor living with a partner). Clients' median household income range for 1995 was $10,000 to $14,999. Most clients (49.2%) were not in the labor force (and not seeking employment), however, 21.1% were seeking employment, 19.1% were employed full-time, 8% were employed part-time, and 2.7% were in other categories.

Client Measures

Locus of control. The Drinking-Related Internal-External (DRIE) scale (Keyson & Janda, 1972, Lefcourt, 1991, pp. 485-489) that we chose to modify consists of 25 items. It is similar to Rotter's (1966) Internal-External Locus of Control Scale in that each item in the scale involves a forced-choice selection between two alternatives. Based on factor analysis results reported by Lefcourt (1991), we chose to include the 15 items encompassed by their 3-factor solution.

Self esteem. Self esteem was measured using the Rosenberg Self-Esteem Scale (Rosenberg, 1965). The scale consists of 10 items (e.g., "I feel that I have a number of good qualities") using a 4-point Likert response scale ("strongly disagree" to "strongly agree"). Fleming and Courtney (1984) reported Cronbach's $\alpha = .88$ for this scale. Originally designed to measure adolescents' global feelings of self-worth, it is in wide use among adult and adolescent populations.

Addiction severity. We used the Addiction Severity Index (ASI) (McLellan, et al., 1980; McLellan, et al., 1992) to measure clients' functioning in 6 areas: medical status, employment/support status, drug and/or alcohol use, legal status, family/social status, and psychiatric status. This widely-used instrument shows high to moderate test-retest reliability and good discriminant and concurrent reliability among a variety of drug using populations (McLellan, et al., 1992; Zanis, et al., 1994).

Psychological functioning. A short version of the Hopkins Symptom Checklist (Uhlenhuth et al., 1966), the SCL-58 (Derogatis et al., 1974a; Derogatis et al., 1974b) is a 58-item scale used to measure somatization, obsessive-compulsive behaviors, interpersonal sensitivity, anxiety, and depression. This scale, also widely used, has high internal consistency within each dimension (r =

.85 or higher for coefficent α), and high test-retest reliability (r = .80 or greater) with the exception of the anxiety subscale (r = .75) (Derogatis, et al. 1974b).

Current drug use. Clients provided a urine sample which was tested for the presence of drugs and alcohol using enzyme multiplied immunoassay technique (EMIT) as the initial test method and gas chromatography/mass spectrometry (GC/MS) as the confirmatory method. In addition to alcohol, the 10 drugs or drug classes we tested for were: amphetamines, barbiturates, benzodiazapines, cannabinoids, cocaine, methadone, methaqualone, opiates, phencyclidine, and propoxyphene.

Procedures

Client interviews. Clients were interviewed after they had been in treatment programs at least 2 weeks. (There was one exception: an inpatient detoxification program in which clients stayed only 3 to 5 days. In this program, clients were interviewed on the third day of treatment.) Trained interviewers conducted the interviews in a private room at the treatment facilities. The interview took approximately 45 minutes to complete and clients were paid $10 for the interview and an additional $5 for a urine sample.

Analysis. We examined the internal consistency of the instrument using both Cronbach's alpha and the split-half procedure using the Spearman-Brown Prophesy formula. The nature of the larger study would not allow us to incorporate test-retest reliability procedures into the design. However, Oswald and her colleagues reported that test-retest reliability for their similar instrument was r = .73 (Oswald, et al., 1992). We tested convergent validity by examining the correlations among Subjects' DRLOC scores, their severity scores on the Addition Severity Index, and their urinalysis results. We also examined the correlations between Subjects' DRLOC scores and

measures of self-esteem and depression, constructs that have been associated with generalized LOC in the literature.

Results

Reliability

Internal consistency. Table 1 lists the means, standard deviations, the reliability coefficient (Cronbach's alpha), and the alpha if individual items are deleted for this measure. Cronbach's alpha for the Drug-Related Locus of Control scale was $\alpha = .81$. The scale's split-half reliability coefficient was .76 after correction with the unequal-length Spearman-Brown prophesy formula.

Scores by Demographic Group

Table 2 displays mean Locus of Control scores by gender, ethnicity, age group, and program modality, along with standard deviation and standard error. Scores range from 1.00 to 2.00, with higher scores indicating greater external locus of control. Surprisingly, male clients had a significantly higher LOC score than females ($p < .01$). Regarding ethnicity, Latinos had the highest mean LOC at 1.34. Difference between ethnic groups was significant at the $p < .05$ level. Mean LOC score did not differ significantly by age group.

Validity

Convergent validity. Convergent validity is assessed when a proposed measure of a trait is compared to a known conceptually similar standard measure or measures. Table 3 displays correlations between DRLOC and other standardized measures. The total Addiction Severity Index (ASI) score was positively correlated with DRLOC ($r = .301$, $p < .00$), that is, higher problem severity

scores were associated with a more external locus of control. This association was also significant for all subscales except Medical. The strongest correlation was with Drug Use score, at .445. Next highest correlations were for Alcohol Use (.310) and Psychological score (.283).

The ASI Psychological Score measures general symptoms related to drinking and drug use (hallucinations, violent behavior, suicidality, generic emotional problems). In contrast, the Hopkins Symptom Checklist measures specific personality disorders (Derogatis et al., 1974b). Each subscale was significantly and positively correlated with LOC; greater psychological dysfunction was associated with a more external LOC. Correlations ranged from .278 (somatization) to .388 (depression).

Of the measures examined, the Rosenberg Self-Esteem Scale had the strongest correlation with LOC, at -.412. Higher self-esteem was associated with lower LOC scores, or more internal locus of control.

Program Modality

Differences by program modality were significant at the $p < .01$ level. Hospital inpatient clients had the highest mean score (1.51), while outpatient drug free clients had the lowest (1.19).

Discussion

This paper presents a study of the validity and reliability of a modified locus of control scale on a large and diverse drug treatment population. The DRLOC scale, which includes only items about substance use and abuse, was found to have high reliability, with a coefficient Alpha equal to .81. This compares favorably to similar scales incorporating similar items: Oswald (1992) obtained an alpha of .78, and Donovan and O'Leary (1978) obtained an alpha of .77. The scale was also found to have good external validity, as the relationship between drug-related locus of control and

ASI subscales, psychological dysfunction, and self-esteem were all significant and in the direction expected. The findings were highly consistent with the literature on locus of control in the general population. We did not hypothesize a correlation between the modality of the treatment program and clients' DRLOC scores. It is likely that clients with a more external LOC may gravitate (or may be referred) toward a different modality than those with a more internal locus of control. In addition, male clients in this study had a significantly higher DRLOC score (i.e., a more external locus of control) than females. This runs counter to the broader literature on LOC. We plan to investigate this relationship and the relationship between client DRLOC scores and outcomes such as treatment retention and reduction of drug use.

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Table 1. Drug-Related Locus of Control: Means, standard deviations, reliability coefficient (Cronbach's alpha), and the alpha if individual items are deleted

	Item	Mean	Standard Deviation	Alpha if Item Deleted
1.	a. I feel so helpless in some situations that I need to get high. b. Abstinence is just a matter of deciding that I no longer want to use drugs.	1.28	.45	.79
2.	a. I have the strength to withstand pressures at work or home. b. Trouble at work or home drives me to use drugs.	1.30	.46	.79
3.	a. Without the right breaks one cannot stay clean. b. Drug abusers who are not successful in curbing their drug use often have not taken advantage of help that is available.	1.17	.38	.82
4.	a. There is no such thing as an irresistible temptation to use drugs. b. Many times there are circumstances that force you to use drugs.	1.36	.48	.81
5.	a. I get so upset over small arguments that they cause me to use drugs. b. I can usually handle arguments without using drugs.	1.22	.41	.79
6.	a. Successfully licking substance abuse is a matter of hard work, luck has little or nothing to do with it. b. Staying clean depends mainly on things going right for you.	1.26	.44	.82
7.	a. When I am at a party where others are using, I can avoid taking drugs. b. It is impossible for me to resist drugs if I am at a party where others are using.	1.41	.49	.79
8.	a. I feel powerless to prevent myself from using drugs when I am anxious or unhappy. b. If I really wanted to, I could stop using drugs.	1.39	.49	.79
9.	a. It is easy for me to have a good time when I am sober. b. I cannot feel good unless I am high.	1.17	.38	.79
10.	a. I have control over my drug use behaviors. b. I feel completely helpless when it comes to resisting drugs.	1.36	.48	.79
11.	a. Sometimes I cannot understand how people can control their drug use. b. There is a direct connection between how hard people try and how successful they are in stopping their drug use.	1.20	.40	.81
12.	a. I can overcome my urge to use drugs. b. Once I start to use drugs I can't stop.	1.44	.50	.80

13.	a. Drugs aren't necessary in order to solve my problems. b. I just cannot handle my problems unless I get high first.	1.13	.34	.80
14.	a. Most of the time I can't understand why I continue to use drugs. b. In the long run I am responsible for my drug problems.	1.22	.41	.81
15.	a. Taking drugs is my favorite form of entertainment. b. It wouldn't bother me if I could never use drugs again.	1.21	.41	.80

Scale reliability coefficient Alpha = .81

Table 2. Mean DRLOC scores for gender, ethnicity, age group, and modality

Variable	Mean	Standard Deviation	Standard Error of the Mean	Probability
Gender				**
Men (n=251)	1.33	.24	.015	
Women (n=302)	1.23	.21	.012	
Ethnicity				*
White (n=228)	1.28	.24	.016	
African Amer (n=176)	1.24	.21	.016	
Asian (n=24)	1.28	.16	.032	
Native American (n=5)	1.31	.20	.091	
Latino (n=104)	1.34	.24	.023	
Multi-ethnic (n=13)	1.29	.25	.070	
Other (n=2)	1.20	.09	.067	
Age Groups				not signif.
18-24	1.32	.25	.036	
25-39	1.27	.23	.013	
40+	1.28	.22	.017	
Modality				**
Outpatient (n=255)	1.19	.18	.012	
Inpatient (n=60)	1.51	.23	.030	
Residential (n=148)	1.26	.21	.017	
Methadone Mnt. (n=61)	1.39	.23	.030	
Day Treatment (n=29)	1.38	.22	.041	

Table 3. DRLOC: Correlations with other measures of psychosocial functioning

Scale	**r**	**p**
Addiction Severity Index		
Alcohol	.310	.000
Medical	.124	.003
Psychological	.283	.000
Employment	.152	.000
Drug	.445	.000
Legal	.090	.034
Family	.190	.000
Total ASI	.339	.000
Rosenberg Self-Esteem Scale	-.412	.000
Hopkins Symptom Checklist		
Somatization	.278	.000
Obsessive-Compulsive	.322	.000
Interpersonal Sensitivity	.343	.000
Depression	.388	.000
Anxiety	.359	.000
Drug use at time of interview (methadone excluded)	.182	.000
Client Rating of 12-Step Usefulness	-.024	.606

INSTRUMENT: FEELINGS ABOUT DRUG USE

Drug-Related Locus of Control (DRLOC)

Now, I'm going to ask you about your feelings about drug use. I'm going to read two statements, Statement A and Statement B, and ask you to choose the one that best describes how you feel now.

(CIRCLE ONE NUMBER FOR EACH STATEMENT)

1. A. I feel so helpless in some situations that I need to get high. 1
   B. Abstinence is just a matter of deciding that I no longer want to use drugs. 2

2. A. I have the strength to withstand pressures at work or home. 1
   B. Trouble at work or home drives me to use drugs. 2

3. A. Without the right breaks you cannot stay clean. 1
   B. Drug abusers who are not successful in curbing their drug use often have not taken advantage of help that is available. 2

4. A. There is no such thing as an irresistible temptation to use drugs. 1
   B. Many times there are circumstances that force you to use drugs. 2

5. A. I get so upset over small arguments that they cause me to use drugs. 1
   B. I can usually handle arguments without using drugs. 2

6. A. Successfully kicking substance abuse is a matter of hard work, luck has little or nothing to do with it. 1
   B. Staying clean depends mainly on things going right for you. 2

7. A. When I am at a party where others are using, I can avoid taking drugs. 1
   B. It is impossible for me to resist drugs if I am at a party where others are using. 2

8. A. I feel powerless to prevent myself from using drugs when I am anxious or unhappy. 1
   B. If I really wanted to, I could stop using drugs. 2

9. A. It is easy for me to have a good time when I am sober. 1
   B. I cannot feel good unless I am high. 2

10. A. I have control over my drug use behaviors. 1
    B. I feel completely helpless when it comes to resisting drugs. 2

11. A. Sometimes I cannot understand how people can control their drug use. 1
    B. There is a direct connection between how hard people try and how successful they are in stopping their drug use. 2

12. A. I can overcome my urge to use drugs. 1
    B. Once I start to use drugs I can't stop. 2

13. A. Drugs aren't necessary in order to solve my problems. 1
    B. I just cannot handle my problems unless I get high first. 2

14. A. Most of the time I can't understand why I continue to use drugs. 1
    B. In the long run I am responsible for my drug problems. 2

15. A. Taking drugs is my favorite form of entertainment. 1
    B. It wouldn't bother me if I could never use drugs again. 2

SCORING: FEELINGS ABOUT DRUG USE

Drug-Related Locus of Control (DRLOC)

The Drug-Related Locus of Control scale is a 15-item, forced-choice measure of drug-use control expectancies in a variety of drug-use-related situations. The scoring procedures below are designed so that clients with a more internal locus of control would produce scores nearer to 1, while those with a more external locus of control would produce scores nearer to 2. To produce this result, Items 1, 3, 5, 8, 11, 14, and 15 must be reverse coded. After recoding, the DRLOC score is computed simply by taking the mean score of all the items. For example, in SPSS:

```
RECODE
  f1q01 f1q03 f1q05 f1q08 f1q11 f1q14 f1q15
  (2=1)  (1=2)  INTO  locq01  locq03  locq05 locq08  locq11  locq14  locq15 .
EXECUTE .

RECODE
  f1q02 f1q04 f1q06 f1q07 f1q09 f1q10 f1q12 f1q13
  (1 thru 2=Copy)  INTO  locq02  locq04  locq06  locq07  locq09  locq10  locq12  locq13 .
EXECUTE .

(use SPSS to order the variables in ascending order, locq01 to locq15)

COMPUTE LocScor = mean.12 (locq01 to locq15) .
EXECUTE .

(The .12, above, allows computation with up to 3 missing items.)
```

Use Table 2 on page 19 to assist you in your interpretation of results.