



Short communication

Psychological distress and marijuana use before and after treatment: Testing cognitive–behavioral matching hypotheses

Josephine M. DeMarce^{a,*}, Robert S. Stephens^a, Roger A. Roffman^b

^aVirginia Polytechnic Institute and State University, United States

^bUniversity of Washington, United States

Abstract

The purpose of this study was to examine the relationship between psychological distress, self-efficacy, and marijuana use using data from a randomized controlled trial of treatments for marijuana dependence [J. Consult. Clin. Psychol. 68 (2000) 898–908]. Adult marijuana users seeking treatment ($N=291$) were randomly assigned to three treatment conditions: (1) cognitive–behavioral relapse prevention support group (RPSG), (2) individualized assessment and advice group (IAI), and (3) delayed treatment control group (DTC). As predicted, psychologically distressed individuals had lower self-efficacy for avoiding marijuana use in psychologically distressing (PD) situations as opposed to nonpsychologically distressing (NPD) situations. However, all participants tended to have lower self-efficacy for NPD situations than PD situations. Efficacy increased and marijuana use decreased following treatment but the RPSG treatment did not have greater benefit for psychologically distressed participants.

© 2004 Elsevier Ltd. All rights reserved.

1. Introduction

Marijuana is one of the most frequently used illicit drugs in the United States (Hall, Johnston, & Donnelly, 1999). Copeland, Swift, and Rees (2001) found a great deal of

* Corresponding author. Tel.: +1 540 2317631; fax: +1 540 2313652.

E-mail address: jdemarce@vt.edu (J.M. DeMarce).

comorbid psychological distress with marijuana-dependent treatment-seeking adults and reported that the most commonly cited reasons for cannabis use was stress relief. Cognitive-behavioral treatment models focus on the use of drugs to cope with negative affective states and the need to acquire alternative coping skills in order to reduce the likelihood of drug use (Marlatt & Gordon, 1985). A central tenet of social learning explanations of substance abuse is that the immediate reinforcing effects of substance use may interact with psychological or behavioral coping deficits in certain individuals to produce escalation of substance use and eventually dependence. Cognitive-behavioral theory postulates that new, positive coping skills can be learned in order to help people deal with psychologically distressing (PD) situations that in turn should increase self-efficacy for avoiding substance use in distressing situations in the future (Bandura, 1986).

In this paper, the role of psychological distress and marijuana use was examined in a population of treatment-seeking adults. A cognitive-behavioral relapse prevention therapy (RPSG), that has shown to be effective in decreasing marijuana use (Stephens, Roffman, & Curtin, 2000), was compared to an assessment and advice (IAI) and a delayed treatment control (DTC) condition. The data for this study were originally collected in order to examine the differential effects of the treatment conditions on marijuana cessation. The current investigators used the existing data to examine hypotheses related to the role of psychological distress and self-efficacy in marijuana treatment.

The following hypotheses were offered: (1) Individuals who report clinical levels of psychological distress will report less confidence in resisting marijuana use in psychologically distressing situations than in nonpsychologically distressing (NPD) situations, (2) Individuals that experience clinical levels of psychological distress will be less confident about their ability to resist marijuana in psychologically distressing situations than those who experience lower levels of psychological distress, (3) Participation in RPSG, rather than the IAI or DTC conditions, will have a greater positive effect on reductions in overall marijuana use for individuals experiencing psychological distress compared to individuals with lower levels of psychological distress, and (4) Participation in RPSG, rather than the IAI or DTC conditions, will have a greater positive effect on self-efficacy in psychologically distressing situations for participants with higher levels of psychological distress.

2. Methods

Participants were recruited for this study through news stories, media announcements, and paid advertisements on radio stations in the greater Seattle, Washington area. Confidentiality was explained to each of the potential participants. Two-hundred ninety-one adult marijuana users seeking treatment for their marijuana use were enrolled. Eligible participants were at least 18 years of age, had smoked 50 times or more in the last 90 days, had not abused alcohol or other drugs in the last 90 days, did not report severe psychological distress, were not involved in other formal treatment for marijuana abuse, and completed the pretreatment research protocol and assessment procedures (participants, conditions, and procedures described in detail elsewhere (see Stephens et al., 2000).

2.1. Measures

2.1.1. Marijuana use

Marijuana use during the past 90 days was assessed at baseline and at the follow-up interview. Both frequency and daily quantity were asked and served as the primary measures of marijuana use. Validity for this measure has been shown by correlating self-reports with both collateral reports and with urine screens (Stephens, Wertz, & Roffman, 1995; Stephens et al., 2000).

2.1.2. Situational self-efficacy scale (SSES)

The SSES is an 18-item measure that was used both prior to and after completion of treatment that asked participants to rate how confident they are in their ability to resist marijuana in several different high-risk situations. Two subscales were formed based on a principal component analysis. One of the factors was defined by psychologically distressing situations (SSES-PD; $\alpha=0.87$ at the baseline and $\alpha=0.89$ at follow-up) while the other was defined by nonpsychologically distressing situations (SSES-NPD; $\alpha=0.88$ at baseline and $\alpha=0.93$ at follow-up).

2.1.3. Brief symptom inventory (BSI)

The BSI is a commonly used 53-item self-report questionnaire that measures current levels of psychological distress. The Global Severity Index (GSI) was used to indicate levels of psychological distress in the current study. The psychologically distressed (PD) group had *t*-scores of 63 or above on the GSI and the not psychologically distressed (NPD) group had GSI *t*-scores lower than 63. The *t*-score of 63 was chosen to separate the two groups because this score represents a clinically significant level of psychological distress (Derogatis, 1993).

3. Results

In order to inform the first and second hypotheses a 2 (Group: PD vs. NPD) \times 2 (Situation: PD vs. NPD) mixed-model ANOVA was performed on the SSES. Group is the between-subjects factor formed by dividing the sample into PD and NPD subsamples on GSI scores as described above. Situation is the within-subjects factor created by comparing scales for PD situations with scales for NPD situations. There was a significant Group \times Situation interaction [$F(1,286)=12.59$, $p<.01$] that qualified significant main effects for Group [$F(1,286)=17.03$, $p<.01$] and Situation [$F(1,286)=314.38$, $p<.01$]. Contrary to the first hypothesis, planned post hoc tests of means indicated that both PD [$t(164)=10.41$, $p<.01$] and NPD [$t(122)=14.96$, $p<.01$] groups had higher situational self-efficacy for PD situations (PD group: $M=4.59$, $S.D.=1.44$; NPD group: $M=5.48$, $S.D.=1.17$) when compared to NPD situations (PD group: $M=3.45$, $S.D.=1.47$; NPD group: $M=3.78$, $S.D.=1.44$). However, in support of Hypothesis 2, PD participants ($M=4.59$, $S.D.=1.44$) had lower situational self-efficacy for resisting marijuana use in PD situations than NPD participants [$M=5.48$, $S.D.=1.17$; $t(286)=5.58$, $p<.01$]. There was no difference in NPD situations (PD group:

$M=3.45$, $S.D.=1.47$; NPD group: $M=3.78$, $S.D.=1.44$) suggesting that situational self-efficacy for resisting marijuana use in NPD situations was similar.

In order to examine the third hypothesis, a 3 (Condition: RPSG vs. IAI vs. DTC) \times 2 (Group: PD vs. NPD) \times 2 (Time: Pretreatment vs. 4-month Follow-up) ANOVA was conducted on marijuana use. The results did not show the predicted three-way interaction. There was a significant two-way interaction [$F(2,239)=23.71$, $p<.05$] for Time \times Condition, as well as a significant main effect present for Time [$F(1,239)=413.85$, $p<.05$]. Consistent with previously reported outcomes of this study, there was a significant decrease in the frequency of marijuana use from baseline to follow-up for all treatment conditions (all $ps<.05$), with the RPSG (RPSG: $M=20.05$, $S.D.=29.62$) and IAI (IAI: $M=23.63$, $S.D.=32.93$) participants reporting significantly lower frequencies of marijuana use at follow-up compared to DTC participants ($M=51.28$, $S.D.=32.19$). However, PD participants did not differ in their response to the treatments.

Results of the 3 (Condition: RPSG vs. IAI vs. DTC) \times 2 (Group: PD vs. NPD) \times 2 (Time: Pretreatment vs. 4-month Follow-up) \times 2 (Situation: PD vs. NPD) ANOVA conducted on the SSES revealed a significant three-way interaction of Group \times Situation \times Time [$F(1,204)=3.89$, $p=.05$] that further qualified a two-way interaction of Group \times Situation [$F(1,204)=9.56$, $p<.01$] and main effects for Time [$F(1,204)=11.79$, $p<.01$] and Situation [$F(1,204)=432.29$, $p<.01$]. Inspection of the means indicated that efficacy increased in both PD and NPD groups for both PD (PD group: $\Delta M=0.51$, NPD group: $\Delta M=0.26$) and NPD situations (PD group: $\Delta M=0.22$, NPD group: $\Delta M=0.35$), but the increase was larger for PD participants on the measure of self-efficacy in PD situations than for any of the other Group \times Situation combinations. The main effect for Time resulted from an overall increase in efficacy scores from baseline to follow-up while the main effect for Situation resulted from higher efficacy scores for NPD situations compared to PD situations. However, the changes were not differential by treatment condition as predicted and therefore did not support the fourth hypothesis.

4. Discussion

Nonpsychologically distressed participants had higher situational self-efficacy for resisting marijuana use in PD situations than did PD participants. However, contrary to hypotheses, PD individuals had higher self-efficacy for PD situations compared to NPD situations. This pattern suggests that even for PD participants, NPD situations may constitute a greater risk for marijuana use than psychologically distressing situations.

Reductions in marijuana use occurred from baseline to follow-up with the IAI and RPSG conditions having greater reductions than the DTC condition. Situational self-efficacy in PD situations increased from baseline to follow-up and more so for PD individuals; however, the RPSG condition containing cognitive-behavioral treatment did not make a difference as predicted. This finding is in line with that of Project Match (Project Match Research Group, 1997) in that participants higher in psychological severity did not do better in cognitive-behavioral treatment when compared to motivational enhancement therapy, or 12-step

facilitation therapy. A possible reason for the lack of differential effectiveness may be because it is not clear that cognitive–behavioral treatment of substance use works by increasing coping skills (Morgenstern & Longabaugh, 2000). Although the finding of reduced self-efficacy in PD situations for PD individuals suggests that treatment geared towards increasing self-efficacy in PD participants for PD situations might contribute to improved treatment outcomes, the results also suggest that current conceptualization and implementation of cognitive–behavioral treatments for substance use are not sufficient to accomplish these ends.

References

- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Copeland, J., Swift, W., & Rees, V. (2001). Clinical profile of participants in a brief intervention program for cannabis use disorder. *Journal of Substance Abuse Treatment*, *20*, 45–52.
- Derogatis, L. R. (1993). *BSI: Brief Symptom Inventory: Administration, scoring, and procedures manual*. Minneapolis, MN: National Computer Systems.
- Hall, W., Johnston, L., & Donnelly, N. (1999). The epidemiology of cannabis use and its consequences. In H. Kalant, W. A. Corrigall, W. Hall, & R. G. Smart (Eds.), *The health effects of cannabis* (pp. 71–125). Canada: Centre for Addiction and Mental Health.
- Marlatt, G. A., & Gordon, J. R. (1985). *Relapse prevention*. New York: Guilford Press.
- Morgenstern, J., & Longabaugh, R. (2000). Cognitive–behavioral treatment for alcohol dependence: A review of evidence for its hypothesized mechanisms of action. *Addiction*, *95*, 1475–1490.
- Project Match Research Group. (1997). Matching alcoholism treatments to client heterogeneity: Project MATCH posttreatment drinking outcomes. *Journal of Studies on Alcohol*, *58*, 7–29.
- Stephens, R. S., Roffman, R. A., & Curtin, L. (2000). Comparison of extended versus brief treatments for marijuana use. *Journal of Consulting and Clinical Psychology*, *68*, 898–908.
- Stephens, R. S., Wertz, J. S., & Roffman, R. A. (1995). Self-efficacy and marijuana cessation: A construct validity analysis. *Journal of Consulting and Clinical Psychology*, *63*, 1022–1031.