

The Role of Avoidance and Inflexibility in Predicting Response to Contingency Management for Cocaine Use Disorders: A Secondary Profile Analysis

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Abstract

Aims: Contingency management (CM) is a reinforcement-based approach that provides tangible rewards for objectively verified drug abstinence. CM is the most effective available behavioral intervention for cocaine use disorders; however response to CM is variable with significant rates of non-response. This poster describes a secondary profile analysis to distinguish CM responders and non-responders on pre-treatment cognitive-affective factors: negative affectivity, experiential avoidance, impulsivity, and cocaine craving/withdrawal symptoms.

Methods: A secondary profile analysis was conducted to identify clinically relevant cognitive-affective characteristics potentially associated with CM response (abstinence vs. continued use) preceding a cocaine pharmacotherapy trial. Ninety-nine cocaine-dependent, treatment-seeking adults participated in a 4-week baseline CM procedure using high-value vouchers for submission of cocaine-negative urines. Separate profiles for responders and the non-responders were established using standardized mean scores on relevant pre-treatment, cognitive-affective measures.

Results: Results indicated no differences between responder subgroups on levels of negative affect, withdrawal/craving, or impulsivity; however, CM non-responders, relative to responders, reported significantly higher levels of avoidance and behavioral inflexibility ($p < .01$) in the context of distressing cocaine-related thoughts, feelings and bodily sensations.

Conclusions: Psychological flexibility may be an important treatment target for enhancing outcomes in cocaine use disorders.

Introduction

- Cocaine use disorders are a significant public health concern with wide-ranging medical, psychiatric, and social consequences.
- Contingency management (CM) is an approach that provides tangible reinforcement for objectively verified drug abstinence or other target behaviors and is a leading behavioral intervention for cocaine use disorders (Dutra et al., 2008).
- Little is known about individual-level characteristics associated with a positive CM response.
- Identifying individual cognitive-affective characteristics associated with CM response that can be targeted via cognitive-behavioral strategies has the potential to inform the development of specialized intervention programs designed to improve abstinence outcomes.
- Documented cognitive-affective factors examined in the substance use literature can be broadly categorized as negative affect, experiential avoidance, impulsivity, and craving/withdrawal.

Aims

- The primary aim of the study was to distinguish CM responders and non-responders on pre-treatment cognitive-affective factors with well-established relations to cocaine use.
- We hypothesized profile differences such that CM responders would show lower levels on each of the cognitive-affective factors compared to CM non-responders.

Methods

Sample: Treatment-seeking, cocaine-dependent adults (18–55 years old) submitting at least one cocaine-positive urine result during screening.

Procedures: Participants entered a 4-week non-medicated baseline period aimed at the initiation of abstinence using high-magnitude CM. Diagnostic interviews and self-report measures were completed prior to beginning the CM intervention. Thrice-weekly clinic visits (MWF) with urine toxicology screening were required. Achievement of abstinence was operationally defined as six consecutive cocaine-negative urines (two weeks of abstinence).

- Negative affect** was measured using the *Beck Depression Inventory-II (BDI-II; Beck & Steer, 1984)*, (Cronbach's $\alpha = .92$); the *Depression Anxiety Stress Scales (DASS-21; S. H. Lovibond & P. F. Lovibond, 1995)*, (Cronbach's $\alpha = .89$); and the negative affectivity subscale of the *Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Carey, 1988)* (Cronbach's $\alpha = .87$).
- Experiential avoidance** was measured with the *Avoidance and Inflexibility Scale (AIS; Gifford et al., 2004; Gifford et al., 2011)* (Cronbach's $\alpha = .87$).
- Cocaine withdrawal/craving** was measured using the *Cocaine Selective Severity Assessment (CSSA; Kampman et al., 1998)* (Cronbach's $\alpha = .71$).
- Impulsivity** was measured with The *Barratt Impulsiveness Scale-11 (BIS-11; Patton, Stanford, & Barratt, 1995)* (Cronbach's $\alpha = .73$).

Analysis: Profile analysis required all dependent variables to utilize the same metric, necessitating z-scoring the AIS, BDI-II, DASS-21, PANAS, CSSA, and BIS-11.

Follow-up of statistically reliable findings used a Holm-Bonferroni correction.

Results

- Responders ($n = 39$) and non-responders ($n = 60$) did not differ on baseline demographic or drug history variables.
- Profile analyses demonstrate a reliable effect indicating differences in profile shape (Wilks' Lambda = 0.835, $F(5, 93) = 3.66$, $p = 0.004$) (Figure 1).
- Post hoc testing showed a reliable difference in AIS scores, whereby non-responders ($M = 48.3$, 95% CI [45.72, 50.9]) demonstrated higher scores on the AIS than responders ($M = 41.8$, 95% CI [37.9, 45.5]).
- No other measures revealed reliable group differences.

Descriptive Statistics and Post Hoc Tests

Measure	M	SD	Wilks's Λ	F	p
AIS	45.76	11.00	0.91	9.10	0.02*
PANAS-NA	16.27	9.66	0.99	0.99	0.96
BDI	16.64	11.95	1.00	0.05	1.00
DASS	20.48	8.40	1.00	0.13	1.00
CSSA	20.60	12.35	0.96	3.91	0.25
BIS	69.98	11.51	0.97	3.11	0.32

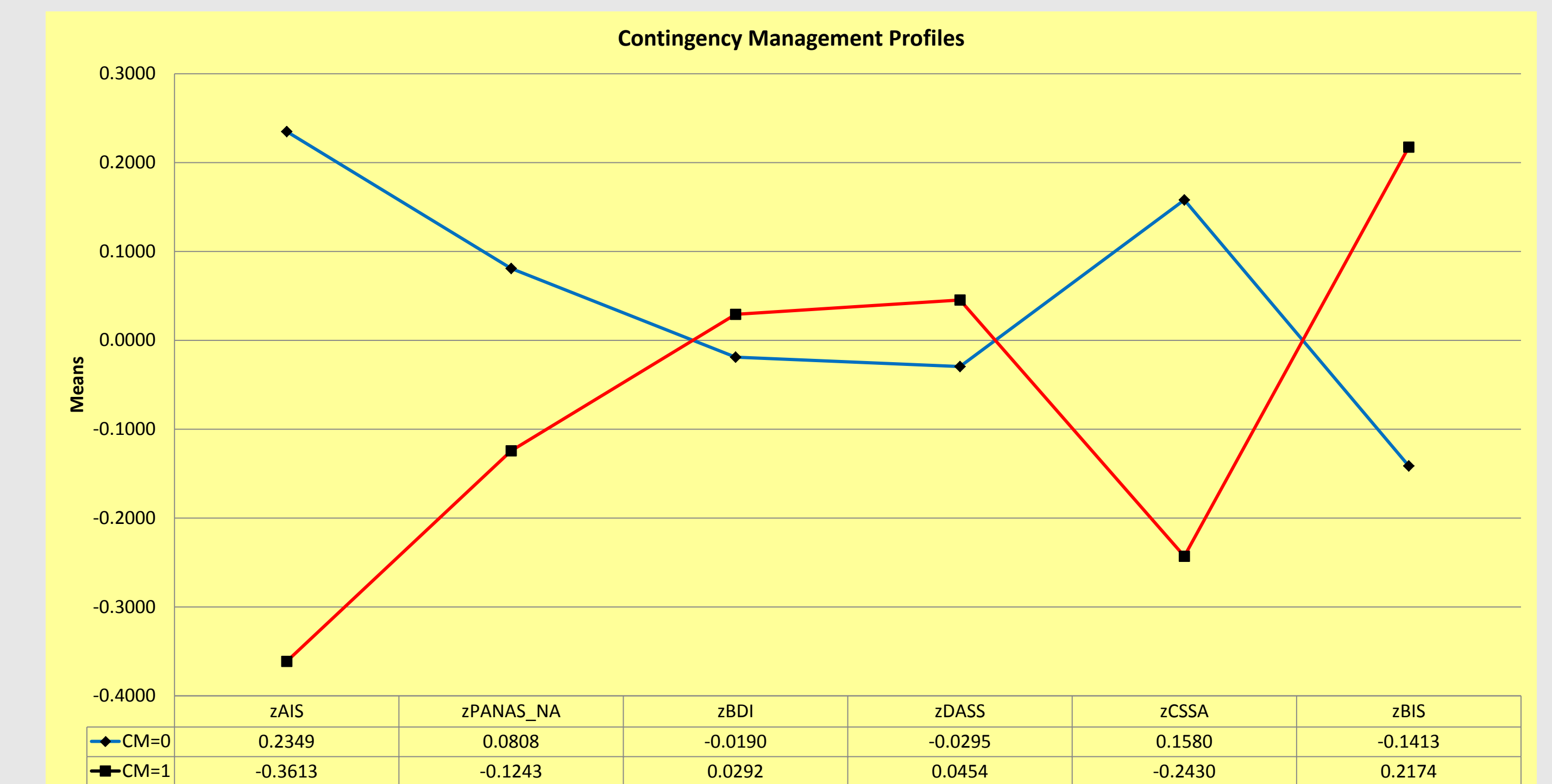


Figure 1. Profiles for responders and non-responders to the contingency management intervention; Red (CM = 1): responders; Blue (CM = 0): nonresponders

Discussion

- CM responders and non-responders were not reliably different in baseline self-reported negative affect, impulsivity, and craving/withdrawal.
- Non-responders had higher levels of experiential avoidance and inflexibility, i.e., non-responders differed from responders in their approach to managing their negative internal experiences.

Conclusions

- Experiential avoidance and behavioral inflexibility may be an explanatory mechanism for CM treatment failures.
- Cocaine dependent adults who were less sensitive to reward contingencies were more avoidant and inflexible in their responses to distressing internal experiences.
- Acceptance and mindfulness interventions targeting psychological inflexibility may improve treatment outcomes for cocaine use disorders.

Limitations

- As this was a post-hoc secondary data analysis, available measures of the selected constructs were limited by the parent study protocol.
- The relatively small sample size limits generalizability and the ability to detect small effects.

References

- Dutra, L., Stathopoulou, G., Basden, S. L., Leyro, T. M., Powers, M. B., & Otto, M. W. (2008). A meta-analytic review of psychosocial interventions for substance use disorders. *American Journal of Psychiatry*, 165(2), 179-187. doi: 10.1176/appi.ajp.2007.06111851
- Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy*, 33(3), 335-343. doi: 10.1016/0005-7967(94)00075-U
- Patton, J. H., Stanford, M. S., & Barratt, E. S. (1995). Factor structure of the Barratt impulsiveness scale. *Journal of Clinical Psychology*, 51(6), 768-774. doi: 10.1002/1097-4679(199511)51:6%3C768::AID-JCLP2270510607%3E3.0.CO;2-1

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