



Short Communication

Contingency management improves smoking cessation treatment outcomes among highly impulsive adolescent smokers relative to cognitive behavioral therapy



Meghan E. Morean^{a,b,*}, Grace Kong^b, Deepa R. Camenga^c, Dana A. Cavallo^b, Kathleen M. Carroll^d, Brian Pittman^b, Suchitra Krishnan-Sarin^b

^a Department of Psychology, Oberlin College, 120 West Lorain Street, Oberlin, OH 44074, United States

^b Department of Psychiatry, Yale University School of Medicine, 34 Park Street, New Haven, CT 06519, United States

^c Department of Pediatrics, Yale University School of Medicine, 1 Long Wharf, New Haven, CT 06519, United States

^d Department of Psychiatry, Yale University School of Medicine, 950 Campbell Avenue, MIRECC 151D, West Haven, CT 06516, United States

HIGHLIGHTS

- Treatments containing CM were more effective than CBT for impulsive teen smokers.
- Behaviorally impulsive teens who got CM self-reported abstinence on more days (77%).
- Behaviorally impulsive teens who got CM were 11.3× as likely to be abstinent at EOT.
- Teens with poor self-regulation who got CM were 8.3× as likely to be abstinent at EOT.

ARTICLE INFO

Available online 20 November 2014

Keywords:

Adolescent
Impulsivity
Smoking cessation
Cognitive behavioral therapy
Contingency management

ABSTRACT

Background: Impulsive adolescents have difficulty quitting smoking. We examined if treatments that provide behavioral incentives for abstinence improve treatment outcomes among impulsive adolescent smokers, who have been shown to be highly sensitive to reward.

Methods: We ran secondary data analyses on 64 teen smokers (mean age = 16.36 [1.44]; cigarettes/day = 13.97 [6.61]; 53.1% female; 90.6% Caucasian) who completed a four-week smoking cessation trial to determine whether impulsive adolescents differentially benefit from receiving cognitive behavioral therapy (CBT), contingency management (CM), or the combination of the two (CM/CBT). Indices of treatment efficacy included self-report percent days abstinent and end of treatment biochemically-confirmed 7-day point prevalence abstinence (EOT abstinence). We assessed self-reported impulsivity using the Brief Barratt Impulsiveness Scale. We used univariate Generalized Linear Modeling to examine main effects and interactions of impulsivity and treatment condition as predictors of self-reported abstinence, and exact logistic regression to examine EOT abstinence.

Results: CM/CBT and CM were comparably effective in promoting abstinence, so analyses were conducted comparing the efficacy of CBT to treatments with a CM component (i.e., CM and CM/CBT). CBT and deficient self-regulation predicted lower self-reported abstinence rates within the total analytic sample. Treatments containing CM were more effective than CBT in predicting 1) self-reported abstinence among behaviorally impulsive adolescents (% days abstinent: CM 77%; CM/CBT 81%; CBT 30%) and 2) EOT point prevalence abstinence among behaviorally impulsive adolescents and adolescents with significant deficits in self-regulation.

Conclusion: CM-based interventions may improve the low smoking cessation rates previously observed among impulsive adolescent smokers.

© 2014 Elsevier Ltd. All rights reserved.

1. Introduction

Although several smoking cessation interventions are available for adolescents, quit rates remain low (Karpinski, Timpe, & Lubsch, 2010). A growing body of research indicates that impulsivity, which is characterized by difficulty delaying gratification (Doran, Mcchague, & Cohen, 2007) and by “a predisposition toward rapid, unplanned action...with

* Corresponding author at: Department of Psychiatry, Yale School of Medicine, Connecticut Mental Health Center (#S-115), 34 Park Street, New Haven, CT 06519, United States. Tel.: +1 203 974 7892.

E-mail address: meghan.morean@gmail.com (M.E. Morean).

diminished regard to negative consequences" (Moeller et al., 2001), may play an important role in adolescent smoking behaviors. Impulsive adolescents are more likely to initiate smoking than their less impulsive counterparts (e.g., Audrain-McGovern, Rodriguez, Tercyak, Neuner, & Moss, 2006; O'loughlin, Dugas, O'loughlin, Karp, & Sylvestre, 2014) and disproportionately struggle to quit (Krishnan-Sarin et al., 2007). Highlighting a possible mechanism of action, impulsive youth experience stronger positively reinforcing (e.g., pleasure) and negatively reinforcing (e.g., dampened negative affect) smoking-related rewards than their less impulsive counterparts, which makes smoking more appealing and quitting more daunting (Doran et al., 2007). When considering these findings alongside evidence that adolescent health behaviors, broadly defined, are more strongly motivated by external changes (e.g., raising prices) than by intrinsic motivation (Steinberg, 2007), it is plausible that impulsive adolescents may benefit differentially from smoking cessation interventions that provide contingency management (CM), a behavioral intervention that reinforces abstinence with immediate, tangible rewards (e.g., cash).

Research indicates that CM is an efficacious smoking cessation intervention for adolescents when offered alone (Corby, Roll, Ledgerwood, & Schuster, 2000; Roll, 2005) or in conjunction with pharmacotherapies (e.g., bupropion, Gray et al., 2011) or psychosocial treatments (e.g., cognitive behavioral therapy; Cavallo et al., 2007; Krishnan-Sarin et al., 2006). Krishnan-Sarin et al. (2013) recently compared the efficacy of CM, CBT, and the combination of CM/CBT for smoking cessation. CM and CM/CBT were superior to CBT in predicting EOT abstinence but did not differ from one another, suggesting that favorable adolescent treatment outcomes largely were driven by CM. However, no study has examined whether CM may improve cessation rates among impulsive smokers.

To this end, we conducted a secondary analysis of the data of Krishnan-Sarin et al. (2013) to determine if impulsive adolescents' ability to quit smoking depended on the treatment they received (i.e., CBT, CM, or CM/CBT). Self-reported impulsivity was assessed based on prior research demonstrating strong associations with youth smoking (e.g., Tercyak & Audrain-McGovern, 2003). We predicted that impulsivity would be inversely related to self-reported abstinence over the course of treatment and to biochemically-confirmed EOT abstinence. However, we anticipated that impulsive adolescents would respond better to treatments providing CM (i.e., either CM alone or CM/CBT) relative to CBT alone. Although CM appeared to drive biochemically-confirmed treatment efficacy within the total sample, it was unclear whether CM/CBT would be superior to CM for impulsive adolescents; if CM were reinforcing irrespective of impulsivity, comparable treatment outcomes for CM and CM/CBT would be expected. However, CBT skills (e.g., assertiveness, coping skills, relapse prevention) may have had an incremental benefit for impulsive adolescents beyond CM's financial motivation for abstinence.

2. Materials and method

We briefly review key aspects of the Krishnan-Sarin et al. (2013) study design below.

2.1. Participants

Our analytic sample comprised 64 high school smokers (mean age 16.36 [1.43]; mean cigarettes/day = 13.97 [6.61]; 53.1% female; 90.6% Caucasian) who had non-missing data on the study variables. Original eligibility criteria included the following: 1) smoking of ≥ 5 cigarettes daily, 2) urine cotinine levels of ≥ 350 ng/ml, 3) parental consent (<18 years), 4) student assent/consent, and 5) the absence of major depression and/or panic disorder. The analytic sample did not differ significantly from the parent sample ($N = 72$) on the study variables (results not depicted).

2.2. Procedure

Treatment conditions (CBT [$n = 22$], CM [$n = 19$], or CM/CBT [$n = 23$]) were balanced by gender and race. The CBT condition comprised four weekly meetings (30 min) with a counselor during which CBT skills were taught (e.g., coping with withdrawal/craving). The CM condition comprised daily weekday appointments (5 min) with a research assistant during which students provided a urine sample and received progressive daily monetary reinforcers for achieving/maintaining abstinence. Research assistants were trained to provide no smoking cessation advice/counseling. The CM/CBT condition comprised both treatments.

2.3. Measures

2.3.1. Impulsivity

Students completed the 30-item Barratt Impulsiveness Scale (BIS-11; Patton, Stanford, & Barratt, 1995). Consistent with recent research in adult and adolescent samples (Morean et al., 2014a; Morean et al., 2014b), an evaluation of the latent structure of the BIS-11 in this sample (results not depicted) confirmed two four-item subscales reflecting Behavioral Impulsivity (e.g., "I do things without thinking") and Impaired Self-Regulation (e.g., "I am a careful thinker" [reverse coded]). Both subscales were normally distributed and internally consistent (Behavioral Impulsivity: mean 9.64 (2.69), $\alpha = .79$; Impaired Self-Regulation mean 9.42 (2.44), $\alpha = .72$) and evidenced moderate overlap ($r = .38$).

2.3.2. Treatment efficacy outcomes

First, we considered seven-day point prevalence EOT abstinence confirmed by urine cotinine levels ≤ 50 ng/ml. The parent study indicated that no CBT participants achieved EOT abstinence (i.e., CBT 0%; CM 36.3%; CM/CBT 36.7%), so we also examined self-reported abstinence (% days over the course of treatment), which was assessed weekly via Time Line Follow Back (Lewis-Esquerre et al., 2005).

2.4. Data analytic plan

2.4.1. Baseline and preliminary analyses

We used analysis of variance (ANOVA) to evaluate differences in baseline impulsivity across treatment conditions. We then evaluated whether providing CM/CBT to impulsive adolescents relative to CM alone significantly improved EOT abstinence (logistic regression) or percent days abstinent (univariate general linear model). For each model, main effects and interactions of impulsivity and treatment condition were examined. If CM and CM/CBT were comparably efficacious, both conditions would be combined (i.e., any CM) in subsequent analyses to maximize statistical power and parsimony.

2.4.2. Primary analyses: treatment efficacy outcomes

We ran a univariate GLM model examining main effects and two-way interactions between treatment condition and impulsivity (i.e., behavioral impulsivity and impaired self-regulation) in predicting self-reported abstinence.

Within the total analytic sample, we then ran an exact logistic regression model examining main effects of treatment condition, behavioral impulsivity, and impaired self-regulation on EOT abstinence. Interactions between treatment condition and impulsivity were not examined given the lack of variance in the CBT condition. As a proxy, we examined main effects of treatment condition separately for individuals deemed high/low in impulsivity based on median split (median Behavioral Impulsivity = 10.0; Impaired Self-Regulation = 9.50).

Download English Version:

<https://daneshyari.com/en/article/7261074>

Download Persian Version:

<https://daneshyari.com/article/7261074>

[Daneshyari.com](https://daneshyari.com)