



Understanding the link between contingency management and smoking cessation: The roles of sex and self-efficacy

Aaron F. Waters^{a,*}, Michael S. Businelle^{b,c}, Summer G. Frank^c, Emily T. Hébert^c,
Darla E. Kendzor^{b,c}

^a Louisiana State University, Department of Psychology, Baton Rouge, LA, USA

^b University of Oklahoma Health Sciences Center, Department of Family and Preventive Medicine, Oklahoma City, OK, USA

^c Stephenson Cancer Center, Oklahoma Tobacco Research Center, Oklahoma City, OK, USA

HIGHLIGHTS

- The underlying mechanisms of contingency management (CM) treatment are unknown.
- CM treatment may influence smoking cessation through its influence on self-efficacy.
- The indirect effect of CM on smoking cessation through self-efficacy varies by sex.
- CM treatment was associated with greater self-efficacy among females than males.

ARTICLE INFO

Keywords:

Smoking cessation
Contingency management
Socioeconomically disadvantaged
Sex
Self-efficacy
And public health

ABSTRACT

Introduction: Little is known about the mechanisms linking contingency management (CM) treatment with smoking cessation, and recent research suggests that the CM approach is associated with better smoking cessation outcomes among females than males. The current study investigated self-efficacy as a potential mechanism through which CM treatment influences smoking cessation, and explored whether these relationships differed by sex.

Methods: Participants ($N = 139$) were primarily Black (63.3%) and female (57.6%) adults enrolled in a safety-net hospital smoking cessation program. Participants received usual care (UC), which included pharmacotherapy and counseling sessions ($n = 66$) or a CM intervention (UC + 4 weeks of small, abstinence contingent financial incentives; $n = 73$). Self-efficacy for quitting was measured on the day after quitting with the Self-Efficacy Scale/Confidence (SESC) questionnaire. Mediation analyses were conducted to evaluate the indirect effects of treatment group on biochemically-verified abstinence (4-weeks post-quit) via self-efficacy, and moderated mediation analyses were conducted to evaluate the moderating role of sex.

Results: Self-efficacy was not found to mediate the relations between CM treatment and smoking cessation in the overall sample. However, analyses indicated a significant moderating effect of sex on the indirect effect of treatment group on smoking cessation through self-efficacy (each of the 3 SESC subscales). Specifically, there was a stronger association between CM and greater self-efficacy among females than males.

Conclusion: Findings suggest that CM treatment had a differing impact on self-efficacy among males and females, which in turn influenced the likelihood of smoking cessation.

1. Introduction

Smoking is the leading cause of preventable death in the United States, killing approximately 480,000 people each year (USDHHS, 2014). In 2015, 13.9% of adults living at or above the poverty level reported current smoking, compared to 26.1% of adults living below the poverty level (Jamal et al., 2016). Not only do individuals of low

socioeconomic status (SES) smoke at higher rates, they also experience poorer smoking cessation treatment outcomes with cessation rates as low as 2%–4% at 6-month follow-up (Fagan, Shavers, Lawrence, Gibson, & O'Connell, 2007; Fernandez et al., 2006; Kendzor et al., 2012; Wetter et al., 2005). Notably, smokers of low SES are just as likely to attempt to quit as smokers of higher SES, though they are half as likely to achieve long-term abstinence (Kotz & West, 2009). The high

* Corresponding author at: Louisiana State University, Department of Psychology, Audubon 318, Baton Rouge, LA 70803, USA.
E-mail address: awater7@lsu.edu (A.F. Waters).

prevalence of low SES smokers attempting to quit and experiencing relapse indicates an urgent need to develop cessation programs which target low SES smokers, and to identify the factors associated with cessation and relapse in treatment.

An abundance of research supports the use of contingency management (CM), the exchange of a reward contingent on verified abstinence, as an effective method to promote abstinence from alcohol and illicit drug use (Dutra et al., 2008; Prendergast, Podus, Finney, Greenwell, & Roll, 2006; Stitzer & Petry, 2006) as well as cigarette smoking in a number of different populations (Businelle et al., 2014; Correia & Benson, 2006; Dunn et al., 2010; Gray et al., 2011; Kendzor et al., 2015; Krishnan-Sarin et al., 2006; Mooney, Babb, Jensen, & Hatsukami, 2005; Shoptaw, Jarvik, Ling, & Rawson, 1996). Kendzor et al. (2015) found that CM in conjunction with a standard intensive tobacco cessation treatment (UC; usual care), doubled smoking abstinence rates in a sample of low SES individuals at a safety-net hospital when compared to patients who received UC alone. Surprisingly, a significant treatment by sex interaction was identified such that females in the CM condition had higher abstinence rates than males in the CM condition and both males and females assigned to the UC condition. This sex difference is interesting given that females typically experience poorer treatment outcomes and have greater difficulty achieving abstinence than males in smoking cessation programs (Smith, Besette, Weinberger, Sheffer, & McKee, 2016; Wetter et al., 1999).

A variety of psychological and physiological factors unique to females have been identified as potential barriers to successful cessation. Females are more likely than males to use tobacco for weight control and as a means to cope with situations that arouse negative affect (Schnoll, Patterson, & Lerman, 2007; Ward, Klesges, Zbikowski, Bliss, & Garvey, 1997). Furthermore, females perceive greater emotional and physical dependence on tobacco than males (Bjornson et al., 1995), and hormonal changes during the menstrual cycle have been linked with increased withdrawal symptoms (Carpenter, Upadhyaya, LaRowe, Saladin, & Brady, 2006; O'Hara, Portser, & Anderson, 1989). Given the adverse impact of psychological and physiological factors on smoking cessation among females, combined with the adversities commonly reported among socioeconomically disadvantaged individuals (Matthews & Gallo, 2011; Matthews, Gallo, & Taylor, 2010), it is intriguing that females of low SES quit smoking at higher rates than males when they received a CM intervention (Kendzor et al., 2015).

Although the CM treatment approach is based on behavioral principles and operant conditioning, cognitive variables may also play a role. Very little is known about the mechanisms that link CM treatments and smoking cessation. Social cognitive theory emphasizes the importance of self-efficacy to health-promoting behavior (Bandura, 2004), and it seems plausible that financial incentives might increase self-efficacy for quitting. Initial research has focused on the role of self-efficacy among those receiving treatments for marijuana-dependence (Litt, Kadden, Kabela-Cormier, & Petry, 2008; Litt, Kadden, & Petry, 2013) and also smoking cessation during residential substance abuse treatment (Alessi & Petry, 2014). Numerous studies have shown that greater self-efficacy is directly associated with an increased likelihood of cessation in a variety of populations (Gwaltney, Metrik, Kahler, & Shiffman, 2009), including individuals of low SES (Businelle et al., 2010; Cinciripini et al., 2003; Lee, Catley, & Harris, 2014). Notably, the relation between self-efficacy and smoking cessation is strongest when self-efficacy is assessed post-quit (Gwaltney et al., 2009). Females experience stronger expectancies for withdrawal (Hendricks et al., 2014) and report more severe symptoms of negative mood upon initial abstinence of smoking (Xu et al., 2008). These withdrawal expectancies have been linked to decreased abstinence self-efficacy (Hendricks et al., 2014). At this time, research has yet to evaluate the mediating role of self-efficacy in CM interventions for smoking cessation or determine whether CM differentially impacts cessation self-efficacy for females.

The purpose of the current study was to examine several dimensions of self-efficacy for maintaining abstinence after a quit attempt as

potential mediators linking CM treatment with smoking cessation, and to evaluate sex as a moderator of these relations. It was hypothesized that greater self-efficacy would mediate the relationship between CM treatment and smoking cessation. In addition, CM treatment was expected to have a greater impact on self-efficacy among females than males. Findings will increase our understanding of the mechanisms through which CM interventions influence smoking cessation among socioeconomically disadvantaged smokers.

2. Methods

2.1. Participants

Participants were socioeconomically disadvantaged smokers recruited during their initial visit to a safety net hospital smoking cessation program in Dallas, Texas. Criteria for inclusion in the study included a score of ≥ 45 on the Rapid Estimate of Adult Literacy in Medicine (REALM) indicating an English literacy level greater than the 6th grade (Davis et al., 1993; Murphy, Davis, Long, Jackson, & Decker, 1993), willingness to quit smoking 7 days from the baseline visit, age ≥ 18 years, an expired carbon monoxide (CO) level of ≥ 8 parts per million (ppm) suggestive of current smoking, current smoking of ≥ 5 cigarettes per day, and willingness to attend 6 weekly sessions. Informed consent was obtained from all participants. The Institutional Review Boards of the University of Texas Southwestern Medical Center and the University of Texas Houston Health Science Center approved the current study.

2.2. Measures

Demographic characteristics measured at baseline (one week pre-quit) included sex, age, race, education, income, and cigarettes smoked per day. The Self-Efficacy Scale/Confidence (SESC; Velicer, Diclemente, Rossi, & Prochaska, 1990) is a 9-item self-report measure that was administered one week prior to quitting and again on the day after the scheduled quit date. Items assessed perceived ability to refrain from smoking in a number of high-risk situations, and each item was rated on a 1 (not at all confident) to 5 (extremely confident) scale. The SESC includes three subscales: self-efficacy positive affect (ability to refrain from smoking in situations that arouse positive affect), self-efficacy negative affect (ability to refrain from smoking in situations that arouse negative affect), and self-efficacy habitual (ability to refrain from smoking in habitual smoking situations). Participants were instructed to quit smoking the evening prior to their second visit and to return to the clinic the following day (i.e., 1 week after baseline, the day after quitting). Those who self-reported abstinence since the prior evening and had a corresponding expired CO level of < 10 ppm were considered abstinent. At 4-weeks post-quit, individuals who self-reported abstinence over the previous 7 days with a corresponding expired CO level of < 8 ppm were considered abstinent (see Benowitz et al., 2002). Participants who reported smoking and those who did not attend the 4-week post-quit assessment were considered to be smoking. Note that there were no differences in missingness (coded as smoking) between males and females at 4 weeks post-quit ($p = 0.91$). A total of 11.9% of males ($n = 7$) and 12.5% of females ($n = 10$) had either missing data or self-reported abstinence without biochemical confirmation.

2.3. Procedure

The parent study included 146 participants. However, seven participants were excluded from the current analyses because they did not complete the SECS scale on the day after quitting, leaving an analytic sample of 139 participants. One week prior to the scheduled quit date, participants were randomized to receive either usual care (UC; standard smoking cessation program) or a contingency management intervention (CM; standard smoking cessation program + adjunctive contingency

Download English Version:

<https://daneshyari.com/en/article/7259014>

Download Persian Version:

<https://daneshyari.com/article/7259014>

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