



Real-Time Readiness to Quit and Peer Smoking within a Text Message Intervention for Adolescent Smokers: Modeling Mechanisms of Change



Michael Mason, Ph.D.^{a,*}, Jeremy Mennis, Ph.D.^b, Thomas Way, Ph.D.^c, Leah Floyd Campbell, Ph.D.^a

^a Virginia Commonwealth University, Richmond, VA 23298-0489, USA

^b Temple University, Philadelphia, PA, USA

^c Villanova University, Villanova, PA, USA

ARTICLE INFO

Article history:

Received 10 April 2015

Received in revised form 14 July 2015

Accepted 20 July 2015

Keywords:

Peer smoking

Adolescent tobacco use

Text messaging

EMA

Readiness to change

ABSTRACT

The psychological construct, readiness to change, is established as a central construct within behavioral change theories such as motivational interviewing (MI). Less is known about the interplay of mechanisms for change within adolescent treatment populations. Understanding the timing and interactive influence that adolescents' readiness to stop smoking and peer smoking have on subsequent tobacco use is important to advance intervention research. Toward this end, we used ecological momentary assessment (EMA) data from an automated texting smoking intervention randomized controlled trial to model the interactive effects of readiness to stop smoking and friends smoking on adolescent tobacco use. Two hundred adolescents were randomized into experimental treatment or attention control conditions, provided smart phones, and were followed for 6 months. African American youth represented the majority of the sample. We collected monthly EMA data for 6 months on friends smoking and readiness to stop smoking as well as survey outcome data. We tested a moderated mediation model using bias corrected bootstrapping to determine if the indirect effect of treatment on cigarettes smoked through readiness to stop smoking was moderated by friends smoking. Findings revealed that readiness to stop smoking mediated the effects of treatment on cigarettes smoked for those adolescents with fewer friends smoking, but not for those with more friends smoking. These results support importance of peer-focused interventions with urban adolescents and provide target mechanisms for future research.

© 2015 Elsevier Inc. All rights reserved.

1. Introduction

Tobacco remains the leading cause of preventable and premature death in the United States. Most adult smokers (>80%) begin smoking by 18 years of age and adolescent smokers are more likely to become adult cigarette smokers compared to those who postpone tobacco use initiation (U.S. Department of Health and Human Services, 2012). Although adolescent tobacco use shows a reduction in use in the last 10 years, among African American high school seniors, past 30 day use has increased from 8.6 to 9.6% (Johnston, O'Malley, Miech, Bachman, & Schulenberg, 2013). Cigar smoking among African American teens is also on the rise with 16.7% of African American teens smoking cigars—more than twice of the 2009 rate [Centers for Disease Control and Prevention (CDC), 2013]. Consequently, developing smoking reduction options that are available to and effective for African American youth is salient to improving public health.

Research has demonstrated strong effects of motivational interviewing (MI) at reducing smoking (Colby et al., 2005; Peterson et al., 2009). Effective brief interventions activate client motivation

through increasing change talk—client produced discussion on the benefits of change—and thereby increase readiness to change (Apodaca & Longabaugh, 2009). Thus, understanding clients' readiness to change is a central construct in MI theory (Hettema, Steele, & Miller, 2005). Understanding the mechanisms of change or active ingredients in behavioral intervention research is critical to understand the process of change, thereby providing opportunity for treatment improvement.

While extensive research supports the premise that peer attitudes and smoking predict adolescent tobacco use (Burk, van der Vorst, Kerr, & Stattin, 2012; Ennett et al., 2008; Hoffman, Monge, Chou, & Valente, 2007; Simons-Morton & Farhat, 2010; Valente, Unger, & Johnson, 2005) and prosocial support serves as a prophylactic (Arthur, Hawkins, Pollard, Catalano, & Baglioni, 2002; Mason, Mennis, & Schmidt, 2011), the integration of a peer network counseling component within interventions is rare, and has yet to be routinely integrated into adolescent smoking intervention models. However, a recent review of the mechanisms of change within adolescent substance use treatment found that positive peer social support was one of three mechanisms identified to mediate treatment effects (Black & Chung, 2014). Clearly, understanding the role of peers in tobacco use is a critical part of adolescent intervention research.

Specific to African American adolescents, peer networks have a strong influence on smoking uptake relative to other racial/ethnic groups (Brook, Pahl, & Ning, 2006) and interventions for African

* Corresponding author at: Department of Psychiatry, Commonwealth Institute for Child & Family Studies, Virginia Commonwealth University, PO Box 980489, Richmond, VA 23298-0489.

E-mail address: Mjmason@vcu.edu (M. Mason).

American adolescents that focus on peer networks have been shown to be effective (Fagan, Brook, Rubenstone, Zhang, & Brook, 2009). Thus, testing peer network-based, innovative smoking interventions for African American adolescents is an important public health issue. Consequently, we have developed a text-based intervention for adolescent smoking utilizing a peer network counseling model that is guided by MI principles and practices.

1.1. Randomized control trial results of original study

The current study is a secondary analysis of data from our randomized control trial. We summarize the trial findings to provide a context for interpreting the current study. We recruited 200 adolescents (90.5% African American) into the automated texting program randomized controlled trial that delivered either the experimental intervention of 30 personalized mode-based peer network counseling messages, or the attention control intervention, consisting of text messages covering general (non-smoking related) health habits. All adolescents were provided smart phones for the study and were assessed at baseline, and at 1, 3, and 6 months post intervention. Adolescents also were assessed using EMA data collection procedures to capture momentary behaviors, such as smoking, peer behaviors, moods, and attitudes. The EMA procedures are described in detail in the ecological momentary assessment (EMA) procedures section below. At 6 months the experimental condition decreased the number of days smoked cigarettes ($p < .05$), number of cigarettes smoked per day ($p < .01$), increased intentions not to smoke in the future ($p < .05$), increased peer social support among girls ($p < .05$), and for boys, reduced the number of close friends in their networks who smoke daily ($p < .05$) compared to controls. Effect sizes ranged from small to large (Mason et al., in press).

Based on these positive outcomes, we examined the mechanisms of change within our text messaging intervention. The purpose of the current study was to test a moderated mediation model to specify the timing and active ingredients within the context of a tobacco reduction intervention. An important empirical question that the current study seeks to address is, given that readiness to change is established as a mechanism of change, to what extent does peer smoking behavior influence adolescents' readiness to change within the context of smoking intervention?

1.2. The current study

We tested an integrated moderated mediation model (Fig. 1) to better understand the mechanisms of change related to the text-based intervention and smoking. The temporally sequenced consideration of readiness to stop smoking and friends smoking illustrates the processes by which our intervention interacts with adolescent smoking behavior. In order to integrate a temporal dimension into our models, we used the condition variable (randomly assigned as treatment or control at baseline), the readiness to stop smoking variable (at the 5 month time point), the friends smoking variable (at the 6 month time point), and cigarettes smoked variable (at the 6 month follow-up survey time point). We chose the time points to capture as much of the entire 6 month study period, while allowing for the moderator (friends smoking) to be assessed after the mediator (readiness to stop smoking).

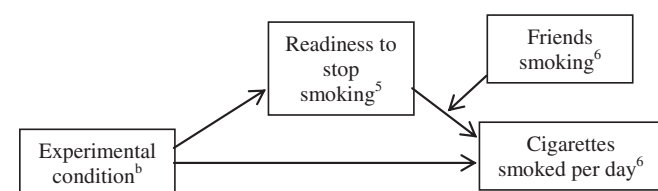


Fig. 1. Conceptual model of the indirect effect on treatment on cigarettes smoked through readiness to quit being moderated by peers smoking.

Our data fit the moderated mediation model best using these time-points, indicating that the interaction of these variables was most robust towards the end of the study. The first part of the model examines whether readiness to stop smoking will mediate the association between treatment condition and the number of cigarettes smoked. We hypothesize that readiness to stop smoking will mediate this pathway. The second part of the model includes peer smoking as a moderator to understand whether this important social component influences this association. We hypothesized that the negative association between readiness to stop smoking and cigarettes smoked will be stronger for adolescents who report less friends smoking than for adolescents who report more friends smoking. If friends' smoking moderates the association between readiness to stop smoking and cigarettes smoked, it is also likely that readiness to stop smoking will conditionally influence the strength of the indirect association between treatment and cigarettes smoked. Specifically, we hypothesized that readiness to stop smoking will mediate the indirect effect when friends smoking is lower, but not higher—demonstrating a pattern of moderated mediation between our study variables (Fig. 1).

2. Method

2.1. Recruitment

We recruited and enrolled 200 adolescents between the ages of 14 and 18 in the greater Richmond, Virginia area from May 2013 to August 2014. We recruited participants from a community adolescent substance abuse facility (66%), public health clinics (21%), university medical center pediatric clinics (10%), and dorms and high schools (3%) using in-person recruitment and flyers. Enrolled participants were given the opportunity of recruiting up to three peers and were compensated for each successful enrollment (\$5 per enrollment). Over half ($n = 107$, 53%) of the total sample was enrolled through direct referral from participating adolescents. Fig. 2 provides details of each step of the study from recruitment to final analysis.

2.2. Procedures

Inclusion criteria were being aged 14 to 18 and a score above the cut-point on the modified version of the Fagerstrom Tolerance Questionnaire (Fagerström, 1978), a screening measure that assesses the level of nicotine dependence. Screening scores of 1 were used as a cutoff score to include adolescents with potential tobacco use problems. The inclusion score was set to low in order to reach youth who are at-risk for future dependence. For all participants younger than 18, consent was obtained from the parent or legal guardian, as well as assent from the teen and consent was obtained for all participants aged 18. Following screening and informed consent, teens were randomized into either the treatment or control group. Randomization was completed using a random number table and blocked randomization to create equal numbers allocated to treatment and control groups. All study procedures were approved by the first authors' institutional review board office.

2.3. Smart phones and application of automated program

All participants were given a smart phone for the duration of the study with unlimited texting, Internet, and limited voice minutes. Participants were trained during enrollment on responding to the text messages that would be delivered during the week-long intervention and answering Web-based follow-up surveys on their phones. Parental monitor controls were made available for all families. These controls allowed parents to limit teens' Internet access, but parents were not able to monitor or interrupt the content of teens' messages. Upon enrollment, subjects completed the baseline survey covering smoking and peer network characteristics through a secure, Web-based data collection and database management application called Research

Download English Version:

<https://daneshyari.com/en/article/328751>

Download Persian Version:

<https://daneshyari.com/article/328751>

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