



Combined treatment for at-risk drinking and smoking cessation among Puerto Ricans: A randomized clinical trial



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HIGHLIGHTS

- Study tested the efficacy of concurrently treating smoking and at-risk drinking.
- Motivation And Problem Solving (MAPS+) was the enhanced intervention in the study.
- There was no main effect of treatment on at-risk drinking or smoking outcomes.
- Smoking status moderated the effect of MAPS+ on several at-risk drinking behaviors.
- Findings are consistent with treatment enhanced coaction for smoking and drinking.

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ABSTRACT

Tobacco and alcohol use are linked behaviors that individually and synergistically increase the risk for negative health consequences. This study was a two-group, randomized clinical trial evaluating the efficacy of a behavioral intervention, "Motivation And Problem Solving Plus" (MAPS+), designed to concurrently address smoking cessation and the reduction of at-risk drinking. Targeted interventions may promote coaction, the likelihood that changing one behavior (smoking) increases the probability of changing another behavior (alcohol use). Puerto Ricans ($N = 202$) who were smokers and at-risk drinkers were randomized to standard MAPS treatment focused exclusively on smoking cessation (S-MAPS), or MAPS+, focused on cessation and at-risk drinking reduction. Drinking outcomes included: number of at-risk drinking behaviors, heavy drinking, binge drinking, and drinking and driving. MAPS+ did not have a significant main effect on reducing at-risk drinking relative to S-MAPS. Among individuals who quit smoking, MAPS+ reduced the number of drinking behaviors, the likelihood of meeting criteria for heavy drinking relative to S-MAPS, and appeared promising for reducing binge drinking. MAPS+ did not improve drinking outcomes among individuals who were unsuccessful at quitting smoking. MAPS+ showed promise in reducing at-risk drinking among Puerto Rican smokers who successfully quit smoking, consistent with treatment enhanced coaction. Integrating an alcohol intervention into cessation treatment did not reduce engagement in treatment, or hinder cessation outcomes, and positively impacted at-risk drinking among individuals who quit smoking. Findings of coaction between smoking and drinking speak to the promise of multiple health behavior change interventions for substance use treatment and chronic disease prevention.

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1. Introduction

Smoking and problematic alcohol use are both major risk factors for death and chronic disease. For example, almost one-third of all cancers and cardiovascular disease in the U.S. are directly attributable to smoking (Ries, Eisner, Kosary, et al., 2004; Burns, 2003) and 10% of deaths are attributable to excessive alcohol use (Boffetta & Hashibe, 2006; Stahre, Roeber, Kanny, Brewer, & Zhang, 2014). Not only are tobacco and alcohol use major public health problems individually, they are clustered within individuals (Falk, Yi, & Hiller-Sturmhofel, 2006) and the simultaneous use of both substances synergistically increases the risk for chronic disease and mortality (Taylor & Rehm, 2006; Pelucchi, Gallus, Garavello, Bosetti, & La Vecchia, 2006; Hart, Davey Smith, Gruer, & Watt, 2010). Moreover, these negative consequences are not limited to only heavy use. Light smoking increases cancer risk as does “at-risk” drinking (Bjartveit & Tverdal, 2005). At-risk drinking, as defined by the Institute of Medicine and the National Institute on Alcohol Abuse and Alcoholism, is characterized by engaging in chronic moderate or high levels of use and/or frequent binge drinking, and is related to numerous negative health and social consequences (NIAAA, 1995; National Institute of Health, 2004; Institute of Medicine, 1990).

Fortunately, the risk for various diseases and other negative health consequences declines following smoking cessation and the reduction of alcohol use (Hayes, Bravo-Otero, Kleinman, et al., 1999; Bosetti, Garavello, Gallus, & La Vecchia, 2006; Bjartveit & Tverdal, 2009). Thus, a critical strategy for chronic disease prevention is to reduce the use of these two substances. National recommendations include integrating screening and treatment of tobacco use and at-risk drinking into health-related settings (Institute of Medicine, 1990; Fiore, Jaen, Baker, et al., 2008). Further, because the clustering of smoking and drinking increases disease risk, treatment costs, and public health burden, there is an urgent need for interventions designed to change multiple risk factors (Pronk, Peek, & Goldstein, 2004). Some research suggests that multiple risk behavior interventions are cost effective, efficacious, and well received (Emmons, McBride, Puleo, et al., 2005; Prochaska, Spring, & Nigg, 2008). In addition, research on multiple health risk behaviors is increasingly emphasizing the study of coaction, defined as the likelihood that change in one behavior increases the probability of change in a second behavior (Prochaska, 2008; Johnson et al., 2014). Importantly, coaction is more likely to occur in the context of targeted interventions addressing the behaviors of interest, indicating that coaction can be induced via treatment. However, few studies have evaluated coaction between smoking and at-risk drinking either via treatment or as part of the natural history of change in these behaviors (Lipschitz, AL, CA, Butterworth, & JO, 2013; Paiva, Prochaska, Yin, et al., 2012; deRuiter, Cairney, Leatherdale, & Faulkner, 2014; Funderburk, Maisto, Sugarman, & Wade, 2008).

Combined treatments for smoking and alcohol use have been primarily conducted among individuals who were in treatment for alcohol abuse/dependence, with smoking as a secondary target of treatment (Prochaska, Delucchi, & Hall, 2004). However, the few studies that have evaluated interventions that add treatment for nondependent alcohol use to smoking cessation treatment have yielded promising results for both smoking and drinking outcomes (Kahler, Metrik, LaChance, et al., 2008; Ames, Pokorny, Schroeder, Tan, & Werch, 2014). Given that approximately half of all smokers attempt to quit each year (Centers for Disease Control and Prevention, 2011), introducing alcohol risk reduction into smoking cessation treatments could be an effective approach to increasing the impact of substance use treatment and chronic disease prevention efforts.

Motivational enhancement and problem solving/coping skills training are empirically supported treatments for both smoking and problematic alcohol use (Fiore et al., 2008; Whitlock, Polen, Green, Orleans, & Klein, 2004; Moyer, Finney, Swearingen, & Vergun, 2002), and recommendations have been made for the integration of these approaches (Baer, Kivlahan, & Donovan, 1999; Constantino, DeGeorge, Dadlani, &

Overtree, 2009). Motivation And Problem Solving (MAPS) is an intervention that combines attributes of both approaches (Fiore et al., 2008; Witkiewitz & Marlatt, 2004; Miller & Rollnick, 2002) to address the consideration, initiation, and maintenance of behavior change (Vidrine, Reitzel, Figueroa, et al., 2013). MAPS utilizes a Wellness Program that is developed in collaboration with the participant. The Wellness Program addresses treatment goals related to behavior change as well as other salient concerns for the participant such as mood and contextual factors (Vidrine et al., 2013). Compared to approaches that emphasize stages or phases of change (Prochaska, DiClemente, & Norcross, 1992), MAPS conceptualizes motivation for behavior change and maintenance as a dynamic and fluid process that varies from moment to moment depending on both individual and contextual factors (Vidrine et al., 2013). Randomized clinical trials have demonstrated that MAPS and its precursors are effective interventions for improving smoking related outcomes including promoting a quit attempt, cessation, and relapse prevention (Reitzel, Irvin Vidrine, Businelle, et al., 2010; Wetter, Mazas, Daza, et al., 2007; McClure, Westbrook, Curry, & Wetter, 2005).

The current study evaluated the efficacy and coaction potential of using MAPS to address both smoking cessation and reduction of at-risk alcohol use among Puerto Rican smokers who were also at-risk drinkers. Like the general population of the U.S., tobacco and alcohol use are major public health problems in Puerto Rico (PR). Although the adult prevalence of smoking in PR is lower (14.8%) than the prevalence of smoking in the U.S. (18.1%) (Centers for Disease Control and Prevention, 2012; Centers for Disease Control and Prevention, 2014), three (heart disease, cancer and cerebrovascular disease) of the five leading causes of death in PR are associated with smoking (Instituto de Estadísticas de Puerto Rico, 2010). Similarly, although Puerto Ricans living in PR are less likely to drink than are either the general population or Latinos in the U.S., those who do drink are more likely to be binge drinkers (Chartier & Caetano, 2010). Thus, reducing both smoking and drinking is crucial to disease prevention in this population.

A standard MAPS treatment (S-MAPS) focused on smoking cessation alone was compared to an enhanced MAPS intervention (MAPS+) that addressed both smoking cessation and the reduction of at-risk drinking behaviors. MAPS+ was hypothesized to be more effective than S-MAPS at reducing at-risk drinking and to produce greater coaction such that individuals who quit smoking would be more likely to also reduce at-risk drinking behaviors. Similar to coaction metrics in previous research (Paiva et al., 2012), in our study coaction was evidenced by individuals indicating change in a second behavior (e.g., at-risk drinking) after successfully changing an initial behavior (e.g., smoking). S-MAPS and MAPS+ were hypothesized to be equally effective with respect to smoking cessation.

2. Methods

2.1. Participants

The study was a two-group randomized clinical trial (RCT) conducted among 202 Puerto Rican smokers who were attempting to quit smoking and who were also at-risk drinkers. Inclusion criteria were: current daily smoker interested in quitting smoking in the next 30 days, aged ≥ 18 years, resident of PR, having a working telephone number and home address, no other household members enrolled in the study, and meeting at least one at-risk drinking criterion in the past 30 days [average of ≥ 2 drinks per day (males) or ≥ 1 drink per day (females); two or more occasions of consuming ≥ 5 drinks (males) or ≥ 4 drinks (females); or one or more occasions of driving after consuming ≥ 3 drinks] (National Institute of Health, 2004; Institute of Medicine, 1990). Exclusion criteria were: currently pregnant, currently incarcerated, or having a score of ≥ 16 on the Alcohol Use Disorders Identification Test (AUDIT; Babor, Higgins-Biddle, Saunders, & Monteiro, 2001), which indicated a probable alcohol use disorder and the need for more than brief counseling. Major causes of ineligibility

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