Predictors of Smoking Cessation Among Individuals Treated for Alcoholism: Findings from Project MATCH

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Purpose of this Study
- Elucidate associations of certain instrumental variables that appear linked to the probability of smoking cessation during and after treatment for alcohol use disorders
- Data from Project MATCH

Method
Data were gathered from Project MATCH, a longitudinal prospective study of the efficacy of three behavioral treatments for alcohol use disorders, representing the largest clinical such trial to date. Timevarying covariate analyses were conducted to examine individual characteristics that prospectively predicted future smoking cessation over the course of 15 months. Predictors included self-efﬁcacy, motivation, and depression, which were assessed at baseline, immediately following treatment (3 months), 9 months, and 15 months.

Results
- Results showed that participants who showed greater self-efﬁcacy around temptation to drink, as assessed by the Self-efﬁcacy Temptation Subscale, and who were farther along the Stages of Change ladder, as measured by the University of Rhode Island Change Assessment (URICA), were more likely to stop smoking. In addition, individuals who were less depressed, as measured by the Beck Depression Inventory, were more likely to quit.

Introduction
- Individuals with alcohol use disorders smoke at higher rates than the general population
- Also tend to be heavier smokers
- Smokers are typically heavier drinkers than non-smokers
- Many factors account for high rates of tobacco use
- And continued use during alcohol treatment.
- Alcoholic smokers can successfully quit smoking using pharmacotherapy and behavioral treatment.
- Low one-year quit rate (0-12%)
- Disruptant results regarding the impact of smoking cessation on alcohol use.
- Clinical studies in which tobacco use was a targeted intervention showed that cessation did not occur, and may have helped, drinking outcomes.
- Clinical studies in which tobacco use was not a targeted intervention showed inconsistent results.
- Naturalistic community studies showed that smoking was associated with increased substance use.
- Psychological and clinical factors associated with increased likelihood of smoking cessation
- Smokers in the general population
- Smokers with alcohol use disorders in recovery
Self-Efficacy
- Self-efficacy, in terms of perceived temptation to drink and confidence regarding not drinking, are strong predictors of smoking abstinence.
- Also true for smoking
- Little work has been conducted to determine if self-eﬁcacy in one domain translates to another domain.

Motivation
- Research results mixed and inconsistent
- Some found positive correlations between quitting drinking and smoking
- Some found negative associations
- Disparities attributed to alcohol or drug use severity, type of treatment (inpatient vs. outpatient), and whether treatment for tobacco dependence was included
- Additional studies warranted.

Depression
- Compelling body of research reported depressed individuals
- More likely to smoke
- Less likely to quit
- Tend to experience greater withdrawal symptoms
- More likely to relapse to cigarette use than nondrinking patients
- nicotine shown to reduce negative affect
- Reciprocal relationship between tobacco use and affective disorders
- Smoking increases the risk of depression
- Depression among persons with alcohol use disorders associated with decreased likelihood of quitting smoking.

Self-Efficacy
- Alcohol Abstinence Self-Efficacy Scale (AASE) (Temptation and Conﬁdence)
- Based on Marlatt’s cognitive-behavioral model of relapse
- 10-item self-report measure
- Assumes Bandura’s construct of self-efficacy applied to alcohol abstinence
- 3-point Likert scale ratings of vulnerability to drink (Temptation Subscale) and conﬁdence to abstain (Conﬁdence Subscale) across 20 high-risk situations
- Collected at baseline, 3-, 9-, and 15-months

Hypotheses
- Alcohol abstinence self-efficacy, motivation, and depression independently related to smoking cessation.
- Expected to be positively associated with increased likelihood of quitting smoking:
  - Higher Alcohol Abstinence Conﬁdence Self-efficacy scores
  - Lower Alcohol Abstinence Temptation Self-efficacy scores
  - Scores indicating that someone was farther along the Stages of Change ladder
- Lower BDI scores

Our Contribution to the Literature
- Largest dataset of its kind (N=1,726)
- Prospective data collection (every 90 days)
- Novel statistical methods to examine outcome patterns over time
- Time-varying covariate analysis
- Allows accurate correlations from complex, longitudinal data
- Recently began to ﬁnd application in alcohol treatment studies

Data Analysis
- SAS version 8.0
- PROC FREQ, PROC ANOVA, and PROC PHREG
- Collected at baseline, 3-, 9-, and 15-months

Results of Time-varying Predictors
- Some hypotheses conﬁrmed; others not
- Variables associated with smoking cessation:
  - Self-efficacy Temptation scores
  - Individual Stage of Change Levels
    - Action and Maintenance
    - Precontemplation and Contemplation in expected direction
- Lower depression scores
- Variables not associated
  - Self-Efﬁcacy Conﬁdence scores
  - Global URICA Readiness to Change score

Discussion

Baseline Sample Characteristics
- No signiﬁcant differences between participants (N=1,193) and participants who were smoking at baseline but did not have complete data at the 3-month interview (N=52) on:
  - Gender
  - Race
  - Age
  - Education
  - Lifetime weeks of tobacco use
  - Percent days abstinent from alcohol use at baseline
  - Drinks per drinking day at baseline
- Mean age = 39.12 years
- Mean education = 13.03 years
- 66% male; 81% non-Hispanic Whites
- Mean drinks per drinking day = 17.69 (SD=11.23)
- Mean lifetime history of smoking = 2.96 years (SD=1.40)
- Mean cigarette consumption in previous 90 days = 88 days
- Mean daily consumption = 23.57 cigarettes (SD=14.93)

Baseline Demographic and Clinical Characteristics

Static and Time-Varying Predictors of Smoking Cessation

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</table>

Table 1

Table 2

Examine how best to address smoking within the context of motivational interviewing.

Suggestions for Future Research
- Determine if certain smoking cessation might be addressed in alcohol and drug treatment
- Determine which clients might be interested
- Determine if self-efficacy and/or motivation around quitting smoking are associated with better alcohol use outcomes
- Examines best to address smoking within the context of motivational interviewing.

Clinical Implications
- Interventions targeting alcohol use can affect other maladaptive behaviors, including cigarette use.
- Anticipate more dramatic results if target smoking directly.
- Strategies to increase behavioral skills to cope with smoking urges yield more beneficial results than increasing self-eﬁcacy around relapse.
- Interventions warranted that move a smoker father along the stages of change ladder
- Motivational treatments should be matched to a patient’s current stage level.
- Given these individuals’ increased vulnerability to cigarette use both because of their alcohol consumption and because of their depression, interventions that target depression are critical.