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Short communication

Depression and smoking: From the Transtheoretical Model of change perspective

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Abstract

This study investigated the associations among history of depression, current depressive symptoms, and constructs of the Transtheoretical Model (TTM) of change: stages of change, decisional balance, temptation, and processes of change for smoking cessation. Participants were 239 current smokers (70.7% male, 49.8% African-American, mean cigarettes per day = 19.8, 42.3% were in precontemplation). Results showed that participants with a history of depression reported higher current depressive symptoms. No significant relationship was observed between stages and history or current level of depressive symptoms. Current depressive symptoms, rather than depression history, was related to other TTM constructs: pros of smoking, temptation to smoke under habitual and negative affect situations, and the self-reevaluation process of change.

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1. Introduction

The association between smoking and depression is well documented (Covey, Glassman, & Stetner, 1998). Studies have attempted to examine whether the association between depression and smoking cessation could be influenced by an individual's readiness to quit smoking. Higher current depressive symptoms were associated with greater readiness to quit smoking in female Finnish smokers when readiness was assessed by a single item "Would you like to stop smoking?" (Haukkala, Uutela, Vartiainen, McAlister, & Knekt, 2000). However, no associations were reported between stages of change and depression among

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smokers enrolled in smoking cessation treatment or among psychiatric outpatients (Acton, Prochaska, Kaplan, Small, & Hall, 2001; Lerman et al., 1996). Empirical data, thus far, are limited by study samples with restricted range in readiness to quit smoking or depression levels. Using a community sample of current smokers, this study examined the association between depression and smoking using the framework of the Transtheoretical Model (TTM; Prochaska & Velicer, 1997).

2. Method

2.1. Participants

A convenience sample of 239 current cigarette smokers was recruited by flyers. Inclusion criteria were 18 or older, smoked ≥ 5 cigarettes/day, and able to read English. Participants were paid US\$10 for completing a questionnaire by mail or in person. The study sample included 70.7% male, 49.8% were African-American, 39.7% were Caucasian, 62% have post-high-school education. The mean age was 42.7 years, daily smoking rate was 19.8, mean Fagerstrom Test for Nicotine Dependence (FTND) score was 4.6, 23.8% reported a lifetime history of major depressive episodes, and the mean Center of Epidemiological Studies-Depression Scale (CES-D) score was 21.2. The sample included 42.3% in precontemplation, 44.4% in contemplation, and 13.3% in preparation.

2.2. Measures

Inventory to diagnose depression (IDD) was used to assess lifetime history of major depressive episodes (Zimmerman & Coryell, 1987) based on *DSM-IV* criteria. The CES-D (Radloff, 1977) was used to assess depressive symptoms. FTND (Heatherton, Kozlowski, Frecker, & Fagerström, 1991) was used to measure nicotine dependence. The TTM constructs measures were *stages of change* scale, *decisional balance inventory*, *situational temptation inventory* and *process of change inventory* (Fava, Velicer, & Prochaska, 1995).

3. Results

Prevalence of history of depression across each stages of change was statistically similar: 19.8%, 24.5%, and 34.4% in precontemplation (PC), contemplation (C), and preparation (PR), respectively [$\chi^2(3) = 2.9$; $P = .24$]. CES-D scores for individuals with a history of depression ($M = 27.51$, $S.D. = 12.33$) were higher than those who had no history [$M = 19.20$, $S.D. = 10.84$; $F(1,233) = 22.8$; $P < .001$]. No difference in CES-D score was observed across stages ($P = .85$). Caucasian participants reported higher prevalence of history of depression (36.8%) than did the African-Americans (15.1%) or participants of other ethnic origins [16.0%; $\chi^2(3) = 13.2$; $P = .001$]. No ethnic difference was observed for CES-D score, stages of change, or other TTM constructs. A 2×3 (History \times Stage) MANCOVA, using CES-D scores as covariate on

Table 1
Follow-up ANCOVA results

Effects	CES-D (covariate)			Stages of change						
TTM constructs	<i>F</i>	<i>P</i>	η^2	<i>F</i>	<i>P</i>	η^2	Adjusted mean (range 1–5)			Tukey comparisons ^a
							PC	C	PR	
<i>Decisional balance</i>										
Pros	14.85	*	0.06	3.09	.05	0.03	2.98	2.74	3.12	–
Cons	8.39	.01	0.03	16.20	*	0.12	2.17	2.80	2.95	PC < C, PR
<i>Temptation</i>										
Positive/Social	1.48	.23	0.01	1.25	.29	0.01	3.65	3.54	3.81	–
Habitual/Addictive	22.45	*	0.09	0.79	.46	0.01	3.34	3.22	3.40	–
Negative affect	18.51	*	0.07	1.85	.16	0.02	3.65	3.79	4.04	–
<i>Processes of change</i>										
Counterconditioning	1.84	.18	0.01	3.87	.02	0.03	2.22	2.37	2.67	–
Consciousness raising	0.06	.80	<0.01	20.44	*	0.15	2.29	2.87	3.37	PC < PR
Dramatic relief	0.89	.43	<0.01	20.18	*	0.15	2.06	2.53	3.21	PC < C < PR
Environmental reevaluation	0.58	.45	<0.01	4.50	.01	0.04	2.07	2.40	2.62	–
Helpful relationship	6.58	.01	0.03	4.25	.02	0.04	1.90	2.27	2.39	–
Reinforcement management	0.03	.86	<0.01	4.39	.01	0.04	1.79	2.13	2.30	–
Stimulus control	0.50	.48	<0.01	9.28	*	0.07	1.48	1.62	2.21	PC, C < PR
Self-liberation	0.40	.53	<0.01	24.42	*	0.18	2.41	3.10	3.70	PC < C < PR
Social liberation	1.52	.22	<0.01	7.21	*	0.06	3.07	3.41	3.80	PC < PR
Self-reevaluation	13.20	*	0.05	31.96	*	0.21	2.14	2.70	3.64	PC < C < PR

Follow-up ANCOVAs were conducted using stage as independent variable and CES-D score as covariate. Stages of change: PC=precontemplation, C=contemplation, and PR=preparation. *Significant at $\alpha < .003$; the alpha level of these follow-up tests was set at .003, based on Bonferroni correction for 15 tests (15 TTM variables) to control for Type I error due to multiple comparisons.

^a Tukey comparisons were conducted for significant stage effects only ($P < .003$); Tukey post hoc pairwise comparisons were based on overall error rate $\alpha = .05$.

the TTM constructs, showed a significant association between CES-D score and the TTM constructs [$F(15,215) = 4.12$, $P < .001$, $\eta^2 = 0.22$] and a significant stage main effect [$F(30,430) = 3.69$, $P < .001$, $\eta^2 = 0.20$]. The main effect of depression history and the History \times Stage interaction effect were not significant. CES-D score was positively correlated ($P < .001$) with the pros of smoking ($r = .24$), temptation subscales for habitual ($r = .29$) and negative affect ($r = .28$) situations, self-reevaluation process of change ($r = .29$), and FTND score ($r = .23$, $P < .001$). CES-D score remains a significant covariate for all four TTM constructs after adjusted for the effects of FTND. Table 1 shows the individual ANCOVA results.

4. Discussion

To our knowledge, this is the first study to examine the association between depression (both history and current depressive symptoms) and the TTM constructs in a non-treatment-seeking

sample of smokers. Although this study did not include former or never smokers, this study was able to test the relationship between depression and TTM constructs that were most salient in the pre-action stages. Findings suggested that depression is not related to individuals' stages of change. Depressive symptoms, but not history of depression, were associated with four TTM constructs. Individuals with elevated current depressive symptoms valued the pros of smoking highly and might be more ambivalent than their peers in making a commitment to quit smoking. Smokers with elevated level of current depressive symptoms appeared to have more difficulties to resist smoking under both habitual and negative affect situations. Higher level of depressive symptoms was related to greater use of self-reevaluation, regardless of stages of change. Self-reevaluation involves cognitive appraisal of one's being a smoker, including feeling disappointed being a smoker and negative emotional response related to smoking, which is particularly important for moving into the action stage of change, as one changes the view of self from being a "smoker" to "nonsmoker" (Prochaska, Velicer, Guadagnoli, Rossi, & Diclemente, 1991). However, overuse of this process, being overly critical of oneself for not being able to quit smoking could be destructive to one's efforts of trying to stop smoking. Interventions on seeking healthy alternatives to smoking in managing moods and teaching individuals to adapt healthier style of thinking using cognitive restructuring techniques may be useful in assisting smokers with higher depressive symptoms to quit smoking.

5. Conclusions

Using data from a sample of current smokers from a non-treatment-seeking population, a history of major depression or depressive symptoms appear to be unrelated to individuals' stages of change. However, the current level of depressive symptoms, rather than depression history, is associated with constructs of the TTM. Smokers with elevated depressive symptoms tend to value highly the pros of smoking, more tempted to smoke in response to habitual and negative affect situations, and may overuse the process of self-reevaluation that may counteract their efforts in quitting. It appears that the cognitive effects of depression may contribute most to the difficulty of smoking cessation among smokers who experience depressive symptoms, which underscore the importance of assessing depressive symptoms and managing them in smoking cessation interventions.

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