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The Relationship of Dysthymia, Minor Depression, and Gender to Changes in Smoking for Current and Former Smokers: Longitudinal Evaluation in the U.S. Population

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Abstract

BACKGROUND—Although data clearly link major depression and smoking, little is known about the association between dysthymia and minor depression and smoking behavior. The current study examined changes in smoking over three years for current and former smokers with and without dysthymia and minor depression.

METHODS—Participants who were current or former daily cigarette smokers at Wave 1 of the National Epidemiologic Survey on Alcohol and Related Conditions and completed the Wave 2 assessment were included in these analyses (n=11,973; 46% female). Analyses examined the main and gender-specific effects of current dysthymia, lifetime dysthymia, and minor depression (a single diagnostic category that denoted current and or lifetime prevalence) on continued smoking for Wave 1 current daily smokers and continued abstinence for Wave 1 former daily smokers.

RESULTS—Wave 1 current daily smokers with current dysthymia (OR=2.13, 95% CI=1.23, 3.70) or minor depression (OR=1.53, 95% CI=1.07, 2.18) were more likely than smokers without the respective diagnosis to report continued smoking at Wave 2. Wave 1 former daily smokers with current dysthymia (OR=0.44, 95% CI=0.20, 0.96) and lifetime dysthymia (OR=0.37, 95%

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Contributors

Dr. Weinberger helped to design the study, managed the literature searches and summaries of previous work, and wrote the first draft of the manuscript. Drs. Pilver and Desai undertook the statistical analyses. Drs. McKee and Mazure helped to design the study and provided feedback on drafts of the paper. All authors contributed to and approved the final manuscript.

Conflict of Interest

Drs. Weinberger, Pilver, Desai, Mazure, and McKee have no conflicts of interest to report.

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CI=0.15, 0.91) were less likely than those without the diagnosis to remain abstinent from smoking at Wave 2. The gender-by-diagnosis interactions were not significant, suggesting that the impact of dysthymia and minor depression on smoking behavior is similar among men and women.

CONCLUSIONS—Current dysthymia and minor depression are associated with a greater likelihood of continued smoking; current and lifetime dysthymia are associated with a decreased likelihood of continued smoking abstinence.

Keywords

Smoking; Cessation; Relapse; Dysthymia; Minor Depression; Gender; Epidemiological Data

1. INTRODUCTION

While a significant amount of research has demonstrated a positive relationship between smoking and depression, most studies have focused on major depressive disorder (MDD). Compared to adults without depression, adults with MDD report higher rates of smoking (Lasser et al., 2000) and appear to have more difficulty quitting smoking (see Ziedonis et al., 2008 for a review). In a national longitudinal U.S. sample, we found that diagnoses of current and lifetime MDD were associated with a reduced likelihood of quitting and higher smoking relapse rates (Weinberger et al., in press). Little is known about the smoking behavior of adults with other depressive disorders like dysthymia and minor depression (Ziedonis et al., 2008).

Dysthymia and minor depression are recurrent mood disorders with important clinical implications that affect a significant number of adults. Dysthymia is marked by a chronic depressed mood that exists for the majority of the time for at least two years along with additional depressive symptoms (e.g., sleep disturbance, low energy; APA, 1994). Dysthymia is less prevalent than MDD (6.8% versus 16.6%; Lasser et al., 2000; Ziedonis et al., 2008) but causes significant impairment and is associated with a more severe course of later MDD (Keller, 1994; Klein and Santiago, 2003).

Minor depression is characterized by at least two weeks of depressed affect and additional depressive symptoms that are fewer than would qualify for an MDD diagnosis (2–4 versus 5 or more symptoms; APA, 2002). Minor depression is included in the DSM-IV-TR (APA, 2002) as a depressive disorder not otherwise specified and is anticipated to be reformulated within the category of depressive disorders, not elsewhere classified with the sub-classification of subthreshold depressive episode with insufficient symptoms in the DSM-5 (APA, 2012). Estimates of the lifetime prevalence of minor depression range from 10 to 24% (Judd et al., 1994; Kessler et al., 1997; Rowe and Rapaport, 2006) and data suggest that minor depression (also referred to as subclinical, subthreshold, or subsyndromal depression; Pincus et al., 1999) results in functional consequences (e.g., work and role impairment) that can reach the same level of severity as MDD (e.g., Howland et al., 2008; Kessler et al., 1997; Lewinsohn et al., 2000; Wagner et al., 2000). Mortality among persons with minor depression is higher than rates in the general population (Carney et al., 2008; Lin et al., 2009). Moreover, adults with dysthymia or minor depression are 2-to-5 times more likely than other adults to develop MDD (Fogel et al., 2006; Horwath et al., 1994; Shankman et al., 2009).

Few studies to date have examined the smoking behavior of adults with dysthymia or minor depression. Current and lifetime dysthymia are associated with higher rates of smoking (Ajdacic-Gross et al., 2009; Lasser et al., 2000; Morris et al., 2006) and current smoking was associated with greater likelihood of minor depression in one study of over 4,000 adults with diabetes (Katon et al., 2004). Lifetime dysthymia has been associated with a lower rate of

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former smoking in cross-sectional epidemiological data (37% versus 42.5%; Lasser et al., 2000) and pregnant women with current dysthymia and current depressive symptoms exhibit more difficulty quitting smoking (Blalock et al., 2006; Park et al., 2009). Symptoms of depression have been associated with poorer smoking cessation outcomes in some studies (Ziedonis et al, 2008, but see also Kassel et al, 2007; Kinnunen et al, 2006); however, it is not clear if these results generalize to smokers who meet formal diagnostic criteria for minor depression. Clarifying the relationships between dysthymia and minor depression and smoking behavior will help to determine the treatment needs for these smokers.

Women are more likely than men to experience dysthymia (Grant et al., 2004) and minor depression (Kessler et al., 1997) and one study of older adults (>85 years old) in Finland found that minor depression was significantly related to smoking in women but not men (Paivarinta et al., 1999). While a stronger relationship between MDD and smoking has been observed among women (Husky et al., 2008), our research found that the relationship between MDD and changes in smoking over three years did not differ by gender (Weinberger et al., in press). It is not known whether the relationship between changes in smoking behavior and either dysthymia or minor depression differs for adult men and women in the U.S.

The primary aim of this study was to examine the relationship of a diagnosis of current dysthymia, lifetime dysthymia, and minor depression (a single diagnostic category that denoted current and or lifetime prevalence; see Methods) to changes in smoking behavior over a three-year period among a large, nationally representative sample of the adult U.S. population. We hypothesized that: 1) among current smokers, a diagnosis of dysthymia (current and lifetime) and minor depression would be positively associated with continued smoking; and, 2) among former smokers, a diagnosis of dysthymia (current and lifetime) and minor depression would be negatively associated with continued smoking abstinence. Given the absence of research on the relationship between dysthymia and minor depression and smoking behavior, as well as the finding that MDD was not differentially associated with changes in smoking for men and women (Weinberger et al., in press), we did not put forth specific hypotheses regarding gender differences in the relationship between dysthymia and minor depression and changes in smoking.

2. METHODS

2.1. Participants and Procedures

Data for these analyses were taken from two waves of the National Institute on Alcohol Abuse and Alcoholism's National Epidemiologic Survey on Alcohol and Related Conditions (NESARC; Wave 1, 2001–2002; Wave 2, 2004–2005). During Wave 1, face-to-face personal interviews were conducted with 43,093 non-institutionalized United State civilians in all 50 states and the District of Columbia. Participants were ages 18 and older with an oversampling of African-Americans, Hispanics, and young adults (ages 18–24). Approximately 86% of the eligible Wave 1 sample completed face-to-face Wave 2 interviews (n=34,653). See Grant et al., 2005, 2003b for more details about the NESARC sampling, purpose, and weight procedures.

2.2. Analytic sample

Using similar methods to our prior investigation of MDD and changes in smoking (Weinberger et al., in press), we utilized two, non-overlapping subsamples of the NESARC population: Wave 1 current daily smokers and Wave 1 former daily smokers. Smoking behavior was assessed in Wave 1 and Wave 2 of the NESARC study using the Alcohol Use Disorders and Associated Disabilities Interview Schedule-DSM-IV (AUDADIS-IV; Grant et al., 2001), a structured interview administered by trained lay interviewers which shows good

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reliability in the assessment of smoking behaviors (ICCs=0.60–0.92; Grant et al., 2003a). Definitions of current and former smoking behavior were consistent with the categories used by the U.S. Department of Health and Human Service's Centers for Disease Control and Prevention (CDC, 2007) and other NESARC investigations (Dierker and Donny, 2008; Husky et al., 2008).

Wave 1 current daily smokers were defined as individuals who (1) smoked 100 or more cigarettes in their lifetime; (2) smoked cigarettes in the 12 months preceding the Wave 1 assessment; and, (3) currently smoked cigarettes every day. We identified 8,213 individuals who met these criteria. We excluded 1,668 individuals who did not complete the Wave 2 assessment or did not provide valid data for smoking status at Wave 2. The final sample of Wave 1 current daily smokers included 6,545 individuals.

Wave 1 former daily smokers were defined as individuals who (1) smoked 100 or more cigarettes in their lifetime; (2) smoked cigarettes before the 12 months preceding the Wave 1 assessment (but not during those 12 months); and, (3) smoked cigarettes every day in the period when they had last smoked. We identified 6,622 individuals who met these criteria. From this subsample, we excluded 1,194 individuals who did not complete the Wave 2 assessment or did not provide valid data for smoking status at Wave 2. The final sample of Wave 1 former daily smokers included 5,428 individuals.

2.3. Measures

2.3.1. Dependent variables: Changes in Smoking Status—Among Wave 1 current daily smokers, the binary dependent variable of interest was "persistence of smoking" (i.e., continued smoking). Persistence of smoking was defined by whether Wave 1 current daily smokers were still current smokers at Wave 2 (coded as "1"; participants who indicated that they smoked cigarettes in the 12 months preceding the Wave 2 interview; i.e., stable current smokers) or if they had quit smoking at Wave 2 (coded as "0"; participants who had not smoked cigarettes in the 12 months preceding the Wave 2 interview; i.e., quitters).

Among Wave 1 former smokers, the binary dependent variable of interest was "persistence of non-smoking" (i.e., continued smoking abstinence). Persistence of non-smoking was denoted by whether Wave 1 former Smokers remained former smokers at Wave 2 (coded as "1"; participants who indicated that they had not smoked cigarettes in the 12 months preceding the Wave 2 interview; i.e., stable former smokers) or had relapsed to smoking at Wave 2 (coded as "0"; participants who indicated that they smoked cigarettes in the 12 months preceding the Wave 2 interview; i.e., relapsers).

2.3.2. Independent variables—Diagnostic criteria for dysthymia and minor depression were assessed at Wave 1 using the AUDADIS-IV (Grant et al., 2001). Dysthymia was a categorical variable with three mutually-exclusive responses: current (dysthymia was present in the twelve months directly preceding the Wave 1 assessment), lifetime (dysthymia was present prior to the twelve months directly preceding the Wave 1 assessment, but absent during the twelve months directly preceding the Wave 1 assessment), and never (no current or lifetime history of dysthymia).

The authors constructed the binary diagnostic variable for minor depression (ever, never) according to DSM-IV-TR diagnostic criteria (APA, 2002). Participants were classified as having a diagnosis of minor depression if they reported ever having experienced two to four symptoms of depression; one of these symptoms had to be either low mood or a decreased interest in activities. Furthermore, participants with minor depression could not meet criteria for current or lifetime major depression. The nature of these data did not allow for the construction of a variable that differentiated between current and lifetime minor depression.

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2.3.3. Covariates—Demographic information was assessed at Wave 1, and included age (18–29, 30–44, 45 and older), race/ethnicity (Non-Hispanic White, Non-Hispanic Black, Non-Hispanic Other, Hispanic), education (Less than High School, High School Graduate, Attended/Completed College), and marital status (Married, Not Married). These categorizations follow the convention of prior work (Grant et al., 2004).

Axis I disorders were assessed using the AUDADIS-IV, which is based on DSM-IV (APA, 1994) diagnostic criteria. The diagnostic variables for all psychiatric disorders were constructed in the same manner; each was a categorical variable with three mutually-exclusive responses: current (disorder was present in the twelve months directly preceding the Wave 1 assessment), lifetime (disorder was present prior to the twelve months directly preceding the Wave 1 assessment, but absent during the twelve months directly preceding the Wave 1 assessment), and never (no current or lifetime history of the disorder). Psychiatric covariates included any manic disorder, anxiety disorder (panic disorder with or without agoraphobia, agoraphobia, social phobia, specific phobia, or generalized anxiety disorder), alcohol abuse/dependence, and drug abuse/dependence. The AUDADIS has demonstrated adequate reliability for assessment of Axis I disorders (κ s=0.40–0.63; Grant et al., 2003a).

2.4. Statistical Analyses

Data were analyzed using SUDAAN (Research Triangle Institute, 2001), a software package that adjusts for characteristics of complex survey sampling designs. NESARC-calculated weights were used to account for nonresponse; attrition; oversampling of African-Americans, Hispanics, and young adults; and to be representative of the U.S. civilian population based on the 2000 decennial census. Statistical significance was determined with the Wald Chi-square test. Statistical tests were two-tailed and differences were considered significant when $p<0.05$.

PROC CROSSTAB was utilized for descriptive and bivariate analyses. We examined the demographic characteristics of the overall Wave 1 sample. We used PROC CROSSTAB to examine the bivariate association between the independent and dependent variables of interest, overall and according to gender. We presented the unweighted N and weighted prevalence estimates in these analyses.

We then built a series of binary logistic regression models using PROC RLOGIST. These models were constructed separately for Wave 1 current daily smokers and Wave 1 former daily smokers. The dependent variables of interest were persistence of smoking for Wave 1 current daily smokers and persistence of non-smoking for Wave 1 former daily smokers. We ran one set of models for each independent variable (dysthymia, minor depression).

The first model included only the independent variable of interest, generating the main effect of the depressive disorder (either dysthymia or minor depression) as an unadjusted odds ratio (OR) and its associated 95% Confidence Interval (95% CI). The second model examined the gender-specific effect of each depressive disorder, and thus included the main effects of the depressive disorder, gender, and the depressive disorder*gender interaction term. For these analyses, we calculated the unique effects of each depressive disorder among women and among men (gender-specific ORs and their associated 95% CIs), as well as the interaction ORs. The interaction OR is the ratio of the gender-specific effects; in other words, it is effect of the depressive disorder among women divided by the effect of that depressive disorder among men (Interaction OR= OR_{women}/OR_{men}). An interaction was considered to be statistically significant when the 95% CI of the interaction OR did not include 1.0 (the corresponding p-value is less than 0.05). Additional models were analyzed that controlled for other psychiatric disorders (including depressive disorders that were not

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the independent variable of interest) and substance use disorders. For persistence of smoking, the significant covariates for the analysis for dysthymia were drug abuse/dependence, MDD, and minor depression while the significant covariates for the analysis of minor depression were drug abuse/dependence and MDD. For persistence of non-smoking, the significant covariates for the analysis for dysthymia were drug abuse/dependence and manic disorders while the significant covariates for the analysis of minor depression were alcohol abuse/dependence, drug abuse/dependence, and manic disorders.

3. RESULTS

3.1. Demographics

Overall, approximately half of the sample included in these analyses (n=11,973) was female (46%), 45 years old or older (57.0%), and attended or completed college (48.5%). The majority of the sample reported being married (64.2%) and identified as Caucasian, Non-Hispanic (79.1%). Compared to Wave 1 former daily smokers, Wave 1 current daily smokers were more likely to be female (47.3% versus 43.9%; $p<0.01$) and less likely to be 45 years or older (40.1% versus 77.5%; $p<0.001$), Caucasian (76.3% versus 82.6%, $p<0.001$), married (55.5% versus 74.8%; $p<0.001$), and to have attended or completed college (43.4% versus 54.8%; $p<0.001$). Wave 1 current daily smokers reported smoking ~17 cigarettes per day (M=17.3, SEM=0.08) and an average smoking onset of ~16 years of age (M=15.7; SEM=0.03). Wave 1 former Daily Smokers reported a similar age of smoking onset (M=16.2, SEM=0.03) and smoked a pack of cigarettes per day when they were smokers (M=20.3, SEM=0.13).

3.2. Prevalence of dysthymia and minor depression by Gender at Wave 1

The prevalence of current and lifetime dysthymia was approximately two times higher for women than men. Among Wave 1 current daily smokers, the prevalence of current dysthymia and lifetime dysthymia was 4.6% and 5.0% among women, and 2.2% and 3.0% among men, respectively ($p<0.0001$). Among Wave 1 former daily smokers, the prevalence of current dysthymia and lifetime dysthymia was 2.3% and 4.6% among women, and 1.1% and 1.9% among men, respectively ($p<0.0001$). The prevalence of minor depression was not associated with gender among Wave 1 current daily smokers (women, 7.8%; men, 7.3%; $p=0.54$) or Wave 1 former daily smokers (women, 8.3%; men, 7.5%; $p=0.42$).

3.3. Persistence of smoking (i.e., continued smoking) among Wave 1 current daily smokers

3.3.1. The Main Effects of dysthymia and minor depression on continued smoking (Table 1)—Compared to participants without the respective diagnosis, participants with current dysthymia were 113% ($p<0.01$) more likely and participants with minor depression were 53% ($p<0.05$) more likely to continue to smoke at Wave 2. Lifetime dysthymia was not significantly associated with continued smoking ($p=0.34$).

3.3.2. The Gender-Specific Effects of dysthymia and minor depression on continued smoking (Table 1)—The effect of current dysthymia on continued smoking remained statistically significant among women, but not among men. However, the interaction odds ratios were not statistically significant for either current or lifetime dysthymia, suggesting that gender did not modify the association between dysthymia and continued smoking. The interaction term for minor depression was non-significant, indicating that gender did not modify the association between minor depression and continued smoking.

Analyses that controlled for significant covariates as listed in the Statistical Analysis section resulted in a similar pattern of main- and gender-specific results for continued smoking.

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3.4. Persistence of non-smoking (i.e., continued abstinence) among Wave 1 former daily smokers

3.4.1. The Main Effects of dysthymia and minor depression on continued abstinence (Table 2)—Compared to participants with no history of dysthymia, participants with current dysthymia and lifetime dysthymia were 56% ($p<0.05$) and 63% ($p<0.05$), respectively, less likely to be stable former smokers at Wave 2. Minor depression was not significantly associated with continued abstinence at Wave 2 ($p=0.87$).

3.4.2. The Gender-Specific Effects of dysthymia and minor depression on continued abstinence (Table 2)—No gender-specific effects or interaction terms were statistically significant, indicating that gender did not modify the association between dysthymia or minor depression and continued abstinence.

Analyses that controlled for significant covariates as listed in the Statistical Analysis section resulted in a similar pattern of main- and gender-specific results for continued abstinence.

4. DISCUSSION

The current study used longitudinal data from a nationally representative sample of the U.S. adult population to examine changes in smoking over three years in adults with and without dysthymia and minor depression. Diagnoses of current dysthymia and minor depression were associated with greater persistence of smoking (i.e., lower smoking cessation) in daily smokers, and diagnoses of current dysthymia and lifetime dysthymia were associated with less persistence of non-smoking (i.e., greater smoking relapse) in former smokers.

A comparison with the results of our study of MDD (Weinberger et al., in press) suggests that the relationship of current dysthymia to continued smoking was greater in magnitude than the relationship between current MDD and continued smoking (OR=1.38, 95% CT=1.03, 1.85) and the relationship of current dysthymia to continued abstinence was similar to the relationship of current MDD to continued abstinence (OR=0.44; 95% CI=0.26, 0.76). Lifetime dysthymia was not significantly associated with continued smoking, contrary to expectations and the findings for lifetime MDD (OR=1.52, 95% CT=1.15, 2.01). Lifetime dysthymia showed a greater relationship with continued abstinence than lifetime MDD (OR=0.71; 95% CI=0.39, 1.24). A diagnosis of minor depression, using DSM-IV-TR criteria, was significantly related to greater continued smoking consistent with research showing a relationship between symptoms of depression and decreased smoking cessation (Ziedonis et al., 2008). Our research suggests that minor depression exerts a similar impact on continued smoking as MDD (Weinberger et al., in press). While current MDD and current dysthymia were associated with both smoking cessation and smoking relapse, lifetime dysthymia and minor depression were significantly associated with either smoking cessation or relapse but not both. Different factors impact the ability of current smokers to quit and former smokers to avoid relapse (e.g., Zhou et al., 2009) and more research is needed to understand the specific ways that dysthymia and minor depression relate to these two different aspects of smoking behavior.

Compared to men, women reported higher rates of current and lifetime dysthymia, consistent with past research (Grant et al., 2004; Kessler et al., 1997), and similar rates of minor depression. Women appear to have more trouble quitting smoking than men (Perkins, 2001; Perkins and Scott, 2008; Wetter et al., 1999) and depression has been suggested to play a role in this difficulty (Perkins, 2001; Reynoso et al., 2004). However, the relationship of dysthymia and minor depression to changes in smoking did not differ by gender, similar to the findings for MDD (Weinberger et al., in press) and a meta-analysis of smoking cessation treatment outcomes (e.g., Hitsman et al., 2003). Interestingly, gender differences

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in the relationship of depression to smoking cessation have been found for certain pharmacological agents (e.g., Covey et al., 1999; Glassman et al., 1993; Hall et al., 1998) suggesting that gender differences exist at the level of specific treatments. Smoking treatment studies rarely examine outcomes by gender (Dickerson et al., 2009; Piper et al., 2001) and it is critical that research continue working to identify variables that can be used to help women quit smoking.

The majority of research on depression and smoking cessation treatment has focused on MDD (Gierisch et al., 2012; Ziedonis et al., 2008) and the few studies of dysthymia and minor depression have examined specific samples (e.g., pregnant smokers, smokers with cardiovascular disease; Blalock et al., 2006; Trockel et al., 2008). It is not yet understood how smokers with dysthymia and minor depression respond to specific treatments. Smokers with depression report greater tobacco withdrawal (Breslau et al., 1992; Weinberger et al., 2010), cue reactivity (Pomerleau et al., 2005; Weinberger et al., 2012), and smoking reward (Spring et al., 2003). Further, neurobiological findings related to the common pathways of nicotine and depression through the nicotinic acetylcholine receptor system also suggest that smokers with depression would experience greater cravings to smoke when attempting to quit (Benowitz, 2008; Mineur et al., 2010; Picciotto et al., 2002). Additional research is needed to understand how these variables can be incorporated into cessation efforts for smokers with depressive disorders. Clinically, smokers with current dysthymia and minor depression may benefit from smoking cessation interventions that target these variables including pharmacological and behavioral treatments that target cravings. Smokers with current and past dysthymia may also need longer monitoring after smoking cessation to catch and intervene early in relapse situations.

Several limitations of the current study must be noted. The sample included noninstitutionalized adults who were at least 18 years old and living in the U.S. Further, the majority of the sample identified as Caucasian. Additional research would be needed to determine whether these results generalize to other groups of smokers. While the NESARC study collected information about smoking status at Wave 1 and Wave 2, the dataset is limited with regard to information about the number and length of quit attempts and the methods of smoking cessation treatment utilized by participants between waves. It would be useful for future research to examine these variables, as well as how the course and severity of dysthymia and minor depression impacts smoking cessation and relapse. Another limitation is the determination of smoking abstinence by self-report alone. Smokers may underreport their tobacco use (Gorber et al., 2009) and biochemical measures should be used to verify smoking status when possible (Benowitz et al., 2002). Finally, dysthymia and depression symptoms are associated with higher rates of nicotine dependence (Grant et al., 2004; Hu et al., 2006; see also Dierker and Donny, 2008) and nicotine dependence was found to relate to the relationship of smoking and anxiety and mood diagnoses in data from Wave 1 of the NESARC (Grover et al., 2012). Further, nicotine dependence is associated with increased smoking persistence (Breslau et al., 2001) and difficulty abstaining from or quitting smoking (Pomerleau et al., 2005; Sienkiewicz-Jarosz et al., 2009). While the low rates of dysthymia and minor depression did not allow us to examine the role of nicotine dependence in the relationship of non-MDD depressive disorders and smoking, it would be important for future studies with larger samples of adults with these disorders (e.g., clinical samples) to examine this important question.

Our findings suggest that current dysthymia and minor depression are associated with a decreased likelihood of quitting smoking, and current and lifetime dysthymia are associated with a greater likelihood of smoking relapse. Further, the relationship of dysthymia and minor depression to changes in smoking appears to be at least equal to the impact of MDD on smoking. The smoking behavior of adults with dysthymia and minor depression has been

an understudied area of research. Additional research on smokers with depressive disorders other than MDD is needed to understand how to best provide appropriate levels of care in assisting these smokers to quit smoking and remain abstinent.

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Table 1

The Relationship of Current Dysthymia, Lifetime Dysthymia, and Minor Depression to Changes in Smoking for Wave 1 Current Daily Smokers.

	Wave 1 Current Daily Smokers				
	% Stable Current Smokers (n= 5,546)	**% Quitters (n=999)**	**OR**	**95% CI**	**p-value**
Main Effects of Dysthymia					
Current	92.2	7.8	2.13	1.23, 3.70	**0.008**
Lifetime	87.4	12.6	1.25	0.79, 1.98	0.34
Never	84.8	15.2	1.00	--	--
Gender * Dysthymia Interaction					
Women					
Current	94.1	5.9	2.94	1.55, 5.54	**0.001**
Lifetime	87.9	12.1	1.33	0.74, 2.41	0.34
Never	84.5	15.5	1.00	--	--
Men					
Current	88.7	11.3	1.38	0.53, 3.58	0.50
Lifetime	86.7	13.3	1.15	0.56, 2.36	0.70
Never	85.0	15.0	1.00	--	--
Interaction OR (Women vs. Men)					
Current vs. Never			2.12	0.65, 6.87	0.21
Lifetime vs. Never			1.16	0.46, 2.89	0.75
Main Effects of Minor Depression					
Ever	89.5	10.5	1.53	1.07, 2.18	**0.021**
Never	84.8	15.2	1.00	--	--
Gender * Minor Depression					
Interaction					
Women					
Ever	90.0	10.0	1.62	0.97, 2.69	0.06
Never	84.8	15.2	1.00	--	--
Men					
Ever	89.0	11.0	1.45	0.88, 2.38	0.14

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	Wave 1 Current Daily Smokers				
	% Stable Current Smokers (n= 5,546)	% Quitters (n=999)	OR	95% CI	p-value
Never	84.8	15.2	1.00	--	--
Interaction OR (Women vs. Men)					
Ever vs. Never			1.12	0.55, 2.27	0.75

Key: OR, odds ratio; CI, confidence interval

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Table 2

The Relationship of Current Dysthymia, Lifetime Dysthymia, and Minor Depression to Changes in Smoking for Wave 1 Former Daily Smokers.

	Wave 1 Former Daily Smokers				
	% Stable Former Smokers (n=5,189)	**% Relapsers (n=239)**	**OR**	**95% CI**	**p-value**
Main Effects of Dysthymia					
Current	91.5	8.5	0.44	0.20, 0.96	**0.04**
Lifetime	90.0	10.0	0.37	0.15, 0.91	**0.03**
Never	96.0	4.0	1.00	--	--
Gender * Dysthymia Interaction					
Women					
Current	91.2	8.8	0.53	0.20, 1.42	0.20
Lifetime	90.1	9.9	0.46	0.16, 1.35	0.15
Never	95.2	4.8	1.00	--	--
Men					
Current	91.9	8.1	0.39	0.10, 1.55	0.18
Lifetime	89.8	10.2	0.30	0.05, 1.91	0.20
Never	96.7	3.3	1.00	--	--
Interaction OR (Women vs. Men)					
Current vs. Never			1.35	0.24, 7.76	0.73
Lifetime vs. Never			1.52	0.17, 13.78	0.70
Main Effects of Minor Depression					
Ever	95.6	4.4	0.96	0.54, 1.68	0.87
Never	95.8	4.2	1.00	--	--
Gender * Minor Depression Interaction					
Women					
Ever	96.1	3.9	1.38	0.56, 3.44	0.48
Never	94.7	5.3	1.00	--	--
Men					
Ever	95.2	4.8	0.68	0.33, 1.41	0.30
Never	96.6	3.4	1.00	--	--

	Wave 1 Former Daily Smokers				
	% Stable Former Smokers (n=5,189)	% Relapsers (n=239)	OR	95% CI	p-value
Interaction OR (Women vs. Men)					
Ever vs. Never			2.02	0.63, 6.48	0.23

Key: OR, odds ratio; CI, confidence interval

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