

Depressed smokers and stage of change: implications for treatment interventions

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Received 18 November 2003; received in revised form 5 April 2004; accepted 20 April 2004

Abstract

Tobacco Dependence among smokers with psychiatric disorders has been under-addressed by the mental health, addictions, and tobacco control communities. This study examined depressed smokers' readiness to quit and the applicability of the Stages of Change framework to a psychiatric sample. Currently depressed smokers ($N = 322$) were recruited from four outpatient psychiatric clinics. Participants averaged 16 cigarettes per day (S.D. = 10) and 24 years (S.D. = 13) of smoking. The majority (79%) reported intention to quit smoking with 24% ready to take action in the next 30 days. Individuals in the preparation stage reported more prior quit attempts, a greater commitment to abstinence, increased recognition of the cons of smoking, and greater use of the processes of change. Precontemplators were least likely to identify a goal related to their smoking behavior. Depressive symptom severity and history of recurrent depressive episodes were unrelated to readiness to quit. This study is one of the first to examine the smoking behaviors of currently depressed psychiatric outpatients. The level and longevity of their tobacco use underscore the need for cessation interventions. The consistency in hypothesized patterns among theoretical constructs of the Stages of Change model supports the transfer of stage-tailored interventions to this clinical population.

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Keywords: Smoking; Tobacco Dependence; Depression; Stage of change

1. Introduction

Smoking among US adults has declined steadily since the first Surgeon General's report on smoking and health in 1964, yet rates remain elevated among psychiatric populations. For individuals with affective disorders, estimates of cigarette smoking range from 50 to 90% (Hughes, 1993), compared to 24% in the general population (US Department of Health and Human Services [USDHHS], 2000). Further, a threefold increase in the prevalence of depression has been reported among smokers compared to nonsmokers (Farrell et al., 2001). Plausible mechanisms for the observed co-occurrence of smoking and depression include the reinforcing mood-altering effects of nicotine, shared environ-

mental or genetic factors, and reduced coping for cessation efforts (Kendler et al., 1993). History of major depressive disorder (MDD) has been associated with greater post-quit mood disturbance (Covey et al., 1990; Hall et al., 1996), more severe withdrawal symptoms (Covey et al., 1990), and in some but not all studies (Hitsman et al., 2003), greater risk of relapse (Glassman et al., 1990, 1993), as well as an increased risk of recurrence of depression following successful cessation (Glassman et al., 2001).

The high prevalence and complicated relationship between mental illness and cessation has led to treatment guidelines recommending integration of smoking cessation efforts within psychiatric care (American Psychiatric Association [APA], 1996; Dalack and Glassman, 1992; Hughes and Frances, 1995). Cigarette smokers with mental illness, like other smokers, are at high risk of smoking-related deaths and ought to be supported with cessation efforts (Bruce et al.,

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1994). On a population basis, in terms of lives saved, quality of life, and cost-effectiveness, treating smoking is considered the most important activity a clinician can do (Hughes, 1998). Current APA (1996) guidelines recommend psychiatrists assess the smoking status of all patients, including readiness to quit, level of Nicotine Dependence, and previous quitting history. Clinicians are encouraged to use this information to provide explicit advice to motivate patients to stop smoking.

Yet despite numerous clinical guidelines encouraging health care providers to identify and treat smokers (e.g., APA, 1996; USDHHS, 2000), the mental health care system has been curiously impervious. Tobacco dependence among smokers with psychiatric disorders has been under-addressed by the mental health, addictions, and tobacco control communities (Center for Tobacco Cessation, 2003). Zarin et al. (1997) linked failure to treat cigarette smoking in psychiatric settings to the erroneous belief on the part of mental health professionals that they do not have the skills to provide smoking treatment, along with assumptions that persons with mental illness are not able or willing to quit smoking. While a substantial body of research has examined the smoking behaviors and motivations of smokers in the general population, few studies have been conducted with clinical populations, and the need for research with currently depressed smokers has been identified specifically (Hitsman et al., 2003). The current study sought to examine depressed smokers' readiness to quit and to identify potential strategies for supporting psychiatric patients who smoke through the process of quitting.

Prochaska and DiClemente (1983) and DiClemente et al. (1991) conceptualized readiness to change as a series of stages from precontemplation (no immediate intention to stop smoking) to contemplation (intending to quit in the next 6 months), preparation (considering quitting in the next month with at least one quit attempt in the past year), action (quit smoking for less than 6 months), and maintenance (smoke free for at least 6 months). Their Stages of Change, or Transtheoretical Model (TTM), has been widely accepted as useful in the treatment of many behaviors (e.g., substance abuse, high-risk sexual behaviors, domestic violence). Unlike models that spring from clinical settings, this model assumes that individuals suffering from problematic disorders may not always be ready to take advantage of treatment interventions, even if they are in the treatment system, and present themselves as such. In prospective studies, smokers' stage of change has significantly predicted cessation at 1- and 2-year follow-ups (Abrams et al., 2000). Another merit of the model is that it not only identifies patients' stage of readiness, it also suggests interventions useful for moving them to the point where they can take advantage of standard treatment models. Tailored expert system interventions based on the TTM principles of behavior change have demonstrated efficacy for supporting individuals through the process of quitting smoking (Prochaska et al., 1993; Velicer et al., 1999). Lastly, within any psychiatric setting there

are patients with destructive behaviors that are amenable to interventions, yet a patient may not have entered the system with the intent of changing that behavior, as may be the case with the depressed smoker. The Stage of Change model allows a systematic assessment and enhancement of the changes that patients are willing to make in these behaviors.

The Stage of Change model has received limited application to understanding the smoking behavior of psychiatric patients. Two studies with chronic psychiatric inpatients and a third with patients with schizophrenia staged the majority of smokers in precontemplation, suggesting few were ready to make a quit attempt (Addington et al., 1997; Carosella et al., 1999; Hall et al., 1995). In contrast, 71% of psychiatric outpatients reported intention to quit smoking, with 28% interested in taking action in the next 30 days (Acton et al., 2001). While smoking status was associated with MDD diagnosis, readiness to quit was unrelated to MDD history or current depressive symptoms.

The current study's objectives were to examine the smoking characteristics of depressed smokers and evaluate the generalizability of TTM theory to this clinical population. Specifically, we hypothesized that depressed smokers' smoking characteristics, abstinence goals, perceived pros and cons of smoking, and use of change strategies would vary as a function of stage of change, consistent with the theoretical model. The association between readiness to quit and depressive symptom severity also was explored. To date, few studies have evaluated smoking cessation interventions with clinically depressed smokers. Replication of theorized associations among the TTM constructs would lend support to evaluation of stage-tailored interventions with this clinical population.

2. Methods

2.1. Participants

Participants were recruited from one of four participating psychiatric outpatient clinics in the San Francisco Bay Area for a clinical trial examining efficacious smoking cessation strategies for psychiatric patients. These included one university based clinic and three clinics that were part of a large Health Maintenance Organization. Recruitment strategies included clinician referrals and posted signage in the waiting areas. The intervention was stage-based and therefore intention to quit smoking was not required of participants. Intervention components included an expert system, stage-based intervention with availability of individual behavioral counseling, nicotine replacement therapy (NRT) and use of bupropion, if NRT failed and bupropion was requested and approved by the patient's physician. Inclusion criteria were diagnosis of unipolar depression on the PRIME-MD (Spitzer et al., 1994), current or in partial remission; having smoked at least one cigarette per day during

the week prior to recruitment; and enrollment as a patient at one of the participating clinical sites. Exclusion criteria were less than 18 years of age, non-English speaking, history of bipolar disorder, or presence of a medical condition that contraindicated use of the pharmacological treatments.

Of 585 completed phone screens, 431 met inclusion criteria and were invited to the baseline assessment, which 338 attended (see Fig. 1). A final sample of 322 met inclusion criteria (70% female) randomized to either the intervention or control condition. Ethnicity was 68% Caucasian, 10% African American, 8% Hispanic, 2% Asian/Pacific Islander, and 12% other. Participants had a mean age of 42 years ($S.D. = 13$), 28% were married or living with a partner, 53% were employed, 96% had a high school degree, and 63% reported income levels greater than US\$ 20,000 a year.

2.2. Procedures

After complete description of the study, participants' written informed consent was obtained, and mental health providers were informed of their patients' enrollment into the study. The appropriate institutional review boards approved the study protocol. Trained master's level survey workers administered the computerized Diagnostic Interview Schedule-IV (CDIS-IV) (Robins et al., 1995). All other measures were self-reported by participants. Measures of the processes of change, decisional balance, and situational temptation were completed only by intervention participants ($n = 163$). These measures were administered as part of the computer-based expert system with responses used to generate intervention participants' individualized feedback reports. The current study examined baseline data.

2.3. Measures

2.3.1. Smoking measures

The Smoking History Questionnaire assessed age first smoked cigarettes, age became a regular smoker, years of smoking, number of prior quit attempts, and number of cigarettes smoked in the 24 h prior to baseline assessment. The Fagerstrom Test for Nicotine Dependence (FTND) (Heatherton et al., 1991) measured smoking behaviors indicative of physical dependence. Commitment to Abstinence Scale (Hall et al., 1990) assessed participants' desire, expectancy of success, anticipated difficulty, and abstinence goal. The first three items were assessed with single item 10-point visual analogue scales. For analyses, goal for abstinence was categorized as no goal (0), intermediate goal (e.g., smoking reduction) (1), or goal of total abstinence (2). Smoking Stage of Change categorized participants into one of the three pre-action stages since all participants were current smokers (DiClemente et al., 1991). Decisional Balance Scale assessed cognitive and motivational aspects of making changes in smoking behavior (Velicer et al., 1985). Participants are asked to rate each item on a scale of 1–5 corresponding to how important each statement is to their decision to smoke. Two subscales of four items each pertain to the pros and cons of smoking (Fava et al., 1995). In the current sample, Cronbach alphas indicated adequate internal consistency of the two scales: pros = 0.73 and cons = 0.68. Situational Temptation Inventory assessed strength of situational cues triggering smoking behavior (Velicer et al., 1990). The short-form has three factors—Positive/Social, Habitual/Addictive, and Negative Affect—of three items each (Fava et al., 1995). Scale reliabilities were 0.58, 0.61, and 0.79, respectively. Processes of Change Inventory

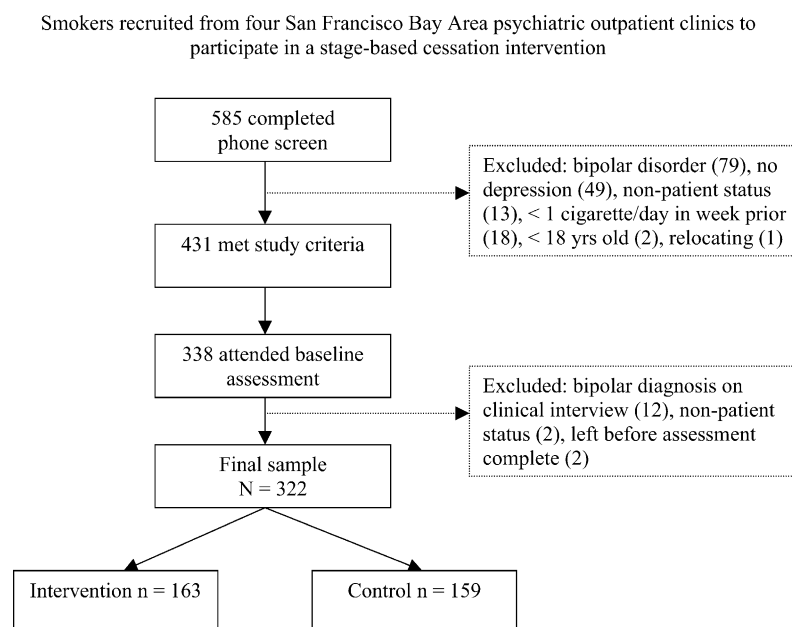


Fig. 1. Study recruitment and randomization.

assessed strategies used in attempts to change smoking behavior (Prochaska et al., 1988). Ten process scales have been identified with two higher-order factors: experiential and behavioral. Scale reliabilities ranged from 0.63 to 0.90 for the individual scales.

2.3.2. Mood measures

CDIS-IV (Robins et al., 1995) is a structured interview yielding DSM-IV diagnoses (APA, 1994). The current study used only the mood and nicotine-related modules. Beck Depression Inventory-II (BDI) (Beck et al., 1996) measured severity of depressive symptoms in the past 2 weeks. Two correlated factors, somatic-affective and cognitive, have been identified. Mental Health Services Use assessed past month visits to a mental health professional and psychiatric medication use.

2.4. Analyses

One-way analyses of variance (ANOVA) and χ^2 -tests were used to examine differences in stage of change by demographic, mood, and smoking measures. Significant test results were followed with post hoc comparisons using the Tukey procedure (Keppel, 1982) to detect differences among the stages. The amount of variance accounted for was measured by ω^2 (Maxwell et al., 1981). Multivariate analysis of variance (MANOVA) tested for stage differences using the entire set of TTM measures (decisional balance, situational temptation, processes) as dependent variables, followed by individual ANOVAs and Tukey post hoc comparisons when significant. Lastly, correlations tested associations between the TTM constructs and smoking and mood measures. To reduce the number of comparisons, the temptations sum score and the two higher-order processes factors (experiential and behavioral) were examined. Bonferroni correction controlled for Type I error (alpha level = 0.05/45 = 0.001).

3. Results

3.1. Descriptive statistics

A majority of participants reported seeing a mental health professional in the previous month (89%) and taking psychiatric medications (80%). Depression diagnoses were 99% MDD (63% recurrent) and 2% dysthymic disorder. Mean (S.D.) BDI score for the sample was 21 (11) with 26% scoring <14 (minimal), 20% 14–19 (mild), 29% 20–28 (moderate), and 25% >28 (severe). Participants averaged 15.5 cigarettes per day (S.D. = 10.1); 28% were light smokers (<10 cigarettes per day), 41% smoked a pack or more per day. Nicotine Dependence was diagnosed in 69%, Nicotine Withdrawal in 44%, and mean (S.D.) FTND was 4.0 (2.5). On average, the sample reported first smoking at age 14.8 years (S.D. = 4.1), becoming a regular smoker at 17.5 years

(S.D. = 5.4), and smoking regularly for 24.3 years (S.D. = 12.8), with 5.6 prior quit attempts (S.D. = 13.1); 87% reported at least one prior quit attempt. Reported goals related to smoking were 19% no goal, 7% controlled smoking, 2% short-term abstinence, 14% occasional smoking, 23% cessation with anticipated slips, 31% complete long-term abstinence, and 4% other goals. Stage distribution was precontemplation = 21%, contemplation = 55%, and preparation = 24%.

3.2. Smoking behavior and mood variables by stage of change

Tests of stage associations with demographic or mood measures were all nonsignificant. Stage of change with total BDI score treated either continuously, $F(2,319) = 0.44$, $P = 0.647$, $\omega^2 = -0.004$, or in severity categories, $\gamma = -0.03$, $t = -0.39$, $P = 0.694$, was nonsignificant, as were stage associations with the BDI factors, F 's(2,319) = 0.59 (somatic-affective) and 0.54 (cognitive), P 's > 0.50. Additionally, the association between stage of change and diagnosis of recurrent MDD was nonsignificant, $\chi^2 = 2.06$, d.f. = 2, $P = 0.358$.

There were no differences by stage with diagnosis of Nicotine Dependence or Withdrawal. A significant stage association was observed for abstinence goals ($\gamma = 0.571$, $t = 7.84$, $P < 0.001$), with precontemplators (49%) most likely to report no goal compared to contemplators (14%) and those in preparation (7%). In contrast, only 5% of precontemplators, but 34% of contemplators, and 48% of those in preparation endorsed the goal of total abstinence. Table 1 presents stage associations with the continuous smoking measures. Significant associations were observed for number of prior quit attempts, desire to quit, and expectancy of abstinence success, with lowest values among precontemplators and highest values for those in preparation.

3.3. Stage associations with TTM measures

The MANOVA test for stage differences on TTM constructs was significant, Wilks' lambda = 0.57, $F(30,292) = 3.16$, $P < 0.001$, multivariate $R^2 = 0.245$. Individual ANOVAs revealed significant stage differences for the cons of smoking, four experiential processes, and three behavioral processes of change (see Table 2). Individuals in preparation and contemplation rated the cons of smoking higher than precontemplators ($P < 0.001$). Fig. 2 illustrates the crossover of the pros and cons. Situational temptation was high across the three pre-action stages. The difference in use of the experiential processes was seen largely between precontemplators and those in contemplation, with the exception of social liberation, which was high across all stages. Smokers in preparation reported the highest use of behavioral processes.

Table 1

Stage of change associations with smoking variables: mean (S.D.)

	PC (<i>n</i> = 67)	C (<i>n</i> = 178)	P (<i>n</i> = 77)	<i>P</i> -value	Tukey HSD	Effect size (ω^2)
Years of smoking	21.9 (13.3)	25.2 (12.3)	24.4 (13.4)	0.201	NS	0.004
Cigarettes per day ^a	16.7 (10.7)	16.2 (10.4)	13.1 (8.5)	0.052	NS	0.012
FTND	4.4 (2.6)	4.0 (2.5)	3.6 (2.5)	0.216	NS	0.003
Lifetime prior quit attempts	4.7 (15.2)	4.5 (10.6)	9.0 (15.7)	0.036	C < P	0.015
Past year prior quit attempts	1.8 (3.0)	1.9 (2.9)	4.2 (3.0)	0.001	PC = C < P	0.091
Desire to quit	2.9 (2.1)	6.9 (2.2)	8.7 (1.5)	0.001	PC < C < P	0.480
Expect success	3.1 (2.6)	5.3 (2.5)	6.7 (2.5)	0.001	PC < C < P	0.181
Expect difficulty	6.8 (3.0)	7.1 (2.5)	6.9 (2.3)	0.595	NS	−0.003

PC: precontemplation, C: contemplation, P: preparation. FTND: Fagerstrom Test for Nicotine Dependence. Variables displaying stage comparisons had statistically significant omnibus ANOVAs ($P < 0.05$); NS: not significant. Effect sizes: small (0.01), medium (0.06), large (0.14) (Cohen, 1988).

^a A comparison of preparation stage smokers on cigarettes per day to precontemplation/contemplation combined was significant, $t(320) = 2.42$, $P = 0.016$, $\omega^2 = 0.015$.

3.4. Associations between TTM constructs, smoking, and mood measures

Correlations between the TTM constructs, smoking, and mood variables are presented in Table 3. Situational temptation and the pros of smoking correlated significantly with cigarettes per day and FTND. Situational temptation also was associated with Nicotine Dependence and Withdrawal and greater anticipated difficulty with quitting. Desire to quit, expectancy of success, and abstinence goals were associated with higher endorsement of the cons of smoking and greater processes use. Depressive symptom severity was unrelated to the TTM constructs.

4. Discussion

This study is one of the first to examine the smoking behaviors of currently depressed psychiatric outpatients. Largely under-researched and underserved by tobacco interventionists, the level and longevity of their tobacco use underscore the need for cessation interventions. The consistency in hypothesized patterns among theoretical constructs of the Stages of Change model supports the transfer of stage-tailored interventions to this clinical population. Conversely, the absence of associations between participants' severity of depressive symptoms and history of prior depressive episodes with readiness to quit is interesting and

Table 2

Transtheoretical Model constructs by smoking stage of change

	PC (<i>n</i> = 33)	C (<i>n</i> = 88)	P (<i>n</i> = 42)	<i>P</i> -value	Tukey HSD	Effect size (ω^2)
Decisional balance ^a						
Pros of smoking	12.8 (3.1)	11.6 (3.7)	11.5 (3.5)	0.240	NS	0.005
Cons of smoking	10.2 (3.4)	13.5 (3.2)	14.5 (3.6)	0.001	PC < C = P	0.158
Situational temptation ^b						
Positive affect/social	11.5 (2.1)	11.0 (2.5)	11.2 (2.7)	0.585	NS	−0.006
Habitual/craving	9.8 (2.6)	10.0 (2.9)	9.3 (2.8)	0.464	NS	−0.003
Negative affect	12.5 (2.1)	12.2 (2.7)	12.9 (2.2)	0.306	NS	0.002
Experiential processes ^a						
Consciousness raising	7.5 (2.5)	9.6 (3.2)	10.5 (3.9)	0.001	PC < C = P	0.079
Dramatic relief	8.1 (2.9)	10.8 (4.1)	12.5 (4.5)	0.001	PC < C = P	0.112
Environmental reevaluation	6.8 (2.5)	9.7 (4.3)	10.2 (4.5)	0.001	PC < C = P	0.076
Self-reevaluation	9.5 (3.9)	12.8 (3.7)	14.9 (4.0)	0.001	PC < C < P	0.179
Social liberation	15.0 (3.2)	14.8 (3.3)	14.4 (3.8)	0.700	NS	−0.008
Behavioral processes ^a						
Self liberation	10.7 (3.8)	10.7 (4.2)	13.6 (4.0)	0.001	PC = C < P	0.081
Helping relationships	10.2 (3.4)	11.1 (3.2)	11.6 (4.1)	0.218	NS	0.007
Counter conditioning	9.3 (3.1)	9.8 (3.2)	11.4 (3.2)	0.006	PC = C < P	0.049
Stimulus control	5.9 (2.6)	6.5 (2.9)	8.3 (3.9)	0.003	PC = C < P	0.059
Reinforcement management	8.2 (3.6)	8.5 (3.4)	9.2 (4.1)	0.445	NS	−0.002

PC: precontemplation, C: contemplation, P: preparation. Variables displaying stage comparisons had statistically significant omnibus ANOVAs ($P < 0.05$); NS: not significant. Effect sizes: small (0.01), medium (0.06), large (0.14) (Cohen, 1988).

^a Scale scores range from 4 to 20.

^b Scale scores range from 3 to 15.

Table 3

Correlations for Transtheoretical Model constructs with smoking and mood measures ($n = 163$)

	Situational temptation	Decisional balance		Processes	
		Pros	Cons	Experiential	Behavioral
Cigarettes per day	0.42*	0.35*	0.04	−0.04	−0.24
FTND	0.55*	0.38*	0.05	0.04	−0.13
Nicotine Dependence	0.29*	0.18	0.04	0.12	0.13
Nicotine Withdrawal	0.29*	0.18	0.15	0.29*	0.18
Difficulty	0.27*	0.18	−0.02	−0.20	−0.18
Desire	−0.03	−0.09	0.41*	0.43*	0.30*
Success	−0.07	−0.05	0.37*	0.40*	0.46*
Abstinence goal	0.06	0.05	0.37*	0.40*	0.30*
BDI-II	0.22	0.09	−0.02	0.00	−0.13

FTND: Fagerstrom Test for Nicotine Dependence, BDI: Beck Depression Inventory-II.

* $P < 0.001$.

suggests that mental health providers' prioritization of psychiatric symptoms over smoking as a target for intervention may be mismatched with patients' perspectives and goals. These findings are consistent with those reported previously (Acton et al., 2001; Lerman et al., 1996; Tsoh and Hall, 2004).

Recent data on over 4600 smokers in the general population indicates that being in the preparation stage of change is associated with a threefold increase in the likelihood of successful cessation attempts (Prochaska et al., 2004). If smoking is not included as a target for treatment, mental health providers will miss the opportunity to support cessation efforts among this important subgroup, which numbered nearly one in four of participants in the current sample. Further, generalizability of the stage of change construct to this patient population provides empirical support for tailoring interventions for depressed smokers' at all levels of motivation.

4.1. Patient characteristics and implications for smoking cessation efforts

The sample reported a long smoking history, averaging 23 years. Ages of initiating and starting to smoke regularly were comparable to national epidemiological data (USDHHS, 1994). Smoking rate and the FTND, which incorporates smoking rate, suggested the sample was not highly addicted; however, 69% met criteria for Nicotine Dependence. The sample's mean of 16 cigarettes per day is comparable to California state surveillance data which averaged 15 cigarettes per day among daily smokers in 2001 (California Department of Health Services, 2002). While some studies have reported heavier smoking among psychiatric versus non-psychiatric populations (Hughes, 1993), the current study recruited light smokers (i.e., inclusion criterion ≥ 1 cigarette per day) and excluded patients with bipolar depression, a group characterized by heavier smoking.

Most participants (87%) reported at least one prior quit attempt and 79% reported current intention to quit smoking.

However, as seen in large population studies (Velicer et al., 1995) and in our previous research with psychiatric outpatients (Acton et al., 2001), a minority (24%) reported being ready to take action in the next 30 days. The findings suggest that interventions for smokers who are not yet ready to make a commitment to quit smoking will be as useful in this subpopulation as they have been in the general population, and may be of value to the majority of smokers who are in outpatient treatment for depression. These data also suggest, however, that a sizable minority of depressed smokers, about one-quarter, are ready to quit smoking, and action-oriented interventions may be of value. It is useful and encouraging that we have a simple assessment tool available to differentiate these groups. The APA's (1996) recommendation to tailor smoking cessation interventions by readiness to quit is supported.

The majority had seen a mental health professional in the past month, suggesting an opportunity for promoting and facilitating smoking cessation efforts. Coordination of cessation efforts with psychiatric care is recommended (APA, 1996) and mental health professionals have the skills needed to implement most smoking cessation interventions. The

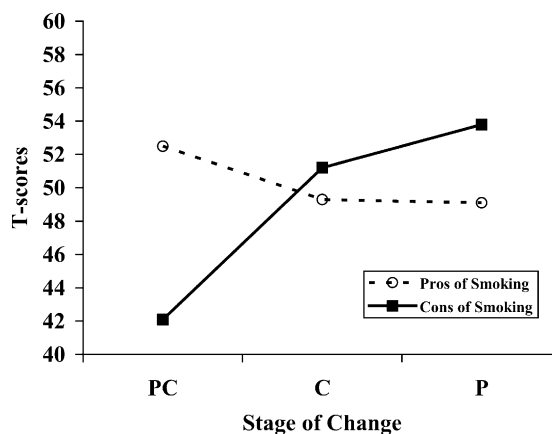


Fig. 2. Decisional balance by stage of change. Scores transformed to standardized T scores ($M = 50$; $S.D. = 10$). PC: precontemplation, C: contemplation, P: preparation.

high percentage taking psychiatric medications highlights the need to consider the impact of smoking cessation on medication levels as well as the potential for drug interactions if pharmacological treatments are used.

4.2. Patient characteristics by stage of change

Participants' smoking behaviors and abstinence goals were found to differ by stage of change. Individuals in preparation had a greater number of prior quit attempts, expressed greater desire to quit, expected greater success with quitting, and were most likely to have the goal of quitting for good. Individuals in the preparation stage also smoked less than those in precontemplation and contemplation. Precontemplators, on the other hand, had fewer prior quit attempts, expressed less desire to quit, had lower expectancy of success with abstinence, and were the least likely to have a goal related to their smoking behavior.

4.3. Stage associations with TTM measures

As seen in the general population (Prochaska, 1994), the crossover of the pros and cons of smoking was observed in the contemplation stage with individuals in contemplation and preparation more highly endorsing the costs of smoking as compared to precontemplators. Another observation from the data is the magnitude of the difference from precontemplation to preparation on the cons (1.15 S.D.) and pros of smoking (0.33 S.D.). These indices are referred to as the strong and weak principles for stage progression respectively, and the values are within the 95% confidence intervals reported previously (Prochaska, 1994). As demonstrated in non-psychiatric samples, an increase in the cons of smoking by about 1 S.D. and a decrease in the pros of smoking by about 0.5 S.D. predict progression across the early stages of change. A recent study reported greater perceived pros of smoking but comparable valuation of the cons among psychiatric versus non-psychiatric heavy smokers (Spring et al., 2003). Stage distributions of the samples, however, were not reported. The current findings suggest stage associations with the pros and cons of smoking mirror those found in the general population. In the current study, situational temptations to smoke were high overall. Since all participants were active smokers, a drop would not be anticipated until actual cessation occurred (Prochaska et al., 1991).

Consistent with the TTM model (DiClemente et al., 1991), differential use of four of the five experiential processes was observed, with individuals in contemplation and preparation reporting greater use of the experiential processes compared to precontemplators. Social liberation was the exception, which previous studies have indicated tends to vary less across stages (Prochaska et al., 1991). The effect sizes for the experiential processes were substantially higher than for the behavioral processes, consistent with the expectation that the experiential processes will be favored in the earlier stages. For the behavioral processes, there was some indica-

tion of greater use among those in preparation compared to precontemplators and contemplators, significant for three of the five processes. Greater stage differentiation in the behavioral processes would be anticipated when the later stages are represented. Effect size indices (ω^2) across all constructs were comparable to those reported in a representative sample of US adults (Fava et al., 1995), suggesting comparability in the strength of stage effects.

4.4. Association of TTM constructs with smoking and mood measures

Greater temptation to smoke was associated with a higher smoking rate, greater FTND score, diagnosis of DSM-IV Nicotine Dependence and Withdrawal, and greater anticipated difficulty with quitting. Patients with this profile may particularly benefit from pharmacological interventions for smoking cessation. A high rating on the pros of smoking also was associated with greater smoking rate and FTND score. These constructs represent barriers to change and all relate to the severity of the smoking problem, which can be reduced both biologically/pharmacologically and behaviorally/psychologically. In contrast, high endorsements of the cons of smoking and greater use of the processes of change were associated with greater desire for abstinence, higher expectancy of success with quitting, and commitment to an abstinence goal. These constructs can be conceptualized as facilitators of change, which can be increased with psychological and behavioral interventions. The divergence of these constructs points to the complexity of smoking behavior and the rationale for multifaceted cessation interventions. Depression symptom severity was unrelated to any of the TTM constructs and does not appear to be an influencing factor in patients' readiness to quit smoking.

4.5. Study limitations

Study limitations include recruitment from one geographic area, exclusion of patients meeting criteria for bipolar affective disorder, and the cross-sectional study design. While the current sample generally reflected the clinic populations from which participants were drawn, the findings may not generalize to public health sector patient populations and more research is warranted. Studies with population-based samples have reported an association between education and stage of change, with the more educated being less represented in the precontemplation stage (Wewers et al., 2003). The number of patients who were not study eligible due to a diagnosis of bipolar disorder was sizeable (83 in total) and suggests another patient group in need of smoking cessation programs. The conclusions are confined to depressed smokers in outpatient psychiatric treatment; however, the findings suggest the potential for integrating cessation efforts into mental health settings. Lastly, future study of stage transitions over time is needed.

4.6. Conclusions

Depressed smokers appear to be a heterogeneous group with respect to readiness to quit. In the current study, a sizable proportion of depressed smokers were motivated for cessation, expressing high desire for abstinence and expectations for success. Only about a quarter, however, were ready to take action in the next month. Clinical guidelines recommend tailoring treatment to patients' readiness to quit. The results from this study provide more empirical guidelines for how such tailoring could be done. The TTM principles of behavior change were upheld in this sample of depressed smokers suggesting the potential for applying stage-based expert system interventions with this population. Intervention strategies for helping smokers progress from precontemplation to contemplation include increasing the salience of the cons of smoking and promoting use of the experiential processes of change (e.g., providing warnings on the health hazards of smoking). For facilitating progress from contemplation to preparation, the processes of self-liberation (e.g., making a commitment to quit), stimulus control (e.g., removing smoking paraphernalia from the home), and counter conditioning (e.g., engaging in alternative behaviors to smoking) appear particularly important. Increasing smokers' expectancies for success and assisting with setting goals for abstinence also appear relevant to stage progression. For those smokers who are ready to quit, the panoply of effective interventions available for cigarette smoking should be offered.

Acknowledgements

This work was supported by the National Institute on Drug Abuse (NIDA) San Francisco Treatment Research Center (grant #P50 DA09253), NIDA grants #T32 DA07250, #R01 DA02538, K23 DA00468, and #R01 CA71378, and a Postdoctoral Fellowship from the Tobacco-Related Disease Research Program (#11FT-0013). The authors thank Raymond Zablotny, M.D., Jerry Pattillo, Ph.D., and David Pating, M.D. for assistance with patient recruitment, Tania Lihatsch and Jesse Cardozo for help with data collection, and Kevin Delucchi, Ph.D. and Kevin Ahern for assistance with data management.

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