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Perceived Risks and Benefits of Quitting Smoking in Non-Treatment Seekers

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Abstract

Little is known about beliefs about quitting and treatment motivation in non-treatment seeking smokers. One hundred eight-eight daily cigarette smokers not currently motivated to quit smoking completed measures of perceived risks and benefits of quitting and motivation to quit. Self esteem related to quitting was positively related to desire to quit, expected success at quitting, confidence in quitting, and motivation to quit. Greater perceived risks of cravings were related to greater expected difficulty of remaining abstinent, and greater perceived risk of increased negative affect was related to decreased expectation of success at quitting, confidence for quitting, and increased expectation for difficulty remaining abstinent. Greater perceived risk of weight gain was related to being less likely to have a goal of complete abstinence. There were no gender, ethnicity, age, or education differences in the relationship of perceived risks and benefits of quitting and motivation. Knowing the risks and benefits that relate to motivation to quit for non-treatment seeking smokers provides the foundation for targeting this group in campaigns to increase quit motivation.

Keywords

Smoking; Perceived Risks; Perceived Benefits; Motivation

INTRODUCTION

Smokers' beliefs about the benefits (e.g., improved health) and risks (e.g., weight gain) of quitting are related to smoking cessation behavior in smokers motivated to quit smoking. Risks and benefits of quitting are associated with treatment motivation (McKee et al., 2005), post-quit withdrawal symptoms (Weinberger, 2008), and smoking treatment outcomes (McKee et al., 2005; Toll et al., 2008). Perceived benefits are positively related and perceived risks are negatively related to quit motivation and treatment outcome (McKee et al., 2005). In addition, women more strongly endorse risks and benefits of quitting and evidence a stronger relationship between perceived risks and treatment outcome (McKee et al., 2005; Toll et al., 2008).

While the majority of smokers (70%) report that they want to quit (CDC, 2002), a sizeable percentage report no motivation to change their smoking. In addition, many smokers who report motivation to quit do not seek treatment for smoking cessation. A recent CDC report

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found that only 44% of the 45.3 million current smokers attempted to quit smoking in the prior year (CDC, 2007). Little is known about non-treatment seeking smokers including their level of motivation to quit smoking and their beliefs about smoking cessation. Szklo and Otero (Szklo & Otero, 2008) reported that smokers seeking treatment were more likely to be female, older, highly educated, nicotine dependent, with a longer smoking duration, and perceived their health as poor compared to non-treatment seeking smokers suggesting that these groups may differ on variables including demographic characteristics and tobacco use indices.

Identifying variables related to treatment motivation for non-treatment seekers provides the foundation for designing methods to engage these smokers in smoking cessation efforts. The current study examined the relationship of perceived risks and benefits of quitting to treatment motivation in non-treatment seeking smokers. It was expected that perceived benefits would be positively related and perceived risks would be negatively related to quit motivation. A secondary aim was to examine perceived risks, perceived benefits, and treatment motivation by demographics (gender, race, education, age).

METHODS

Participants and procedures

Participants were 188 daily cigarette smokers (57.4% male; 54.1% Caucasian) participating in laboratory studies of smoking behavior through the Yale Transdisciplinary Tobacco Use Research Center (TTURC). Participants had to report no quit attempts in the prior 3 months and no interest in quitting in the next month. Data for these analyses were taken from the standard assessment battery that all participants completed during their baseline evaluation.

Measures

Demographic and smoking information—Participants were asked to report their gender, age, race, ethnicity, education, cigarettes per day smoked (CPD), onset of smoking, onset of daily smoking, and whether they had ever intentionally quit smoking. Nicotine dependence was assessed using the 6-item Fagerström Test for Nicotine Dependence (FTND; (Heatherton et al., 1991).

Perceived Risks and Benefits Questionnaire (PRBQ)—The PRBQ (McKee et al., 2005) is a 40-item measure assessing risks and benefits of smoking cessation on a Likert Scale (1=no chance, 7=certain to happen). The risk scales are: 1) Weight Gain (“I will gain weight.”); 2) Negative Affect (“I will be more irritable.”); 3) Difficulty Attending or Concentrating (“I will be less able to concentrate.”); 4) Social Ostracism (“I will feel uncomfortable around smokers.”); 5) Loss of Enjoyment (“I will miss the pleasure I get from cigarettes.”); 6) Craving (“I will have strong urges for a cigarette.”). The benefit scales are: 1) Health (“I will lower my chances of developing lung cancer.”); 2) General Well-Being (“I will be healthier.”); 3) Self-Esteem (“I will feel proud that I was able to quit.”); 4) Finances (“I will be able to save more money.”); 5) Physical Appeal (“I will smell cleaner.”); 6) Social Approval (“The people who care most about me will approve.”).

Measures of motivation to quit smoking—The Thoughts About Abstinence Scale (TAAS, (Hall et al., 1991) is a 5 item self-report questionnaire that measures: 1) desire to quit smoking, 2) expected success at quitting, 3) expected difficulty of quitting, and 4) confidence in ability to quit on 10-point Likert scales (e.g., 1=no desire to quit; 10 = extremely high desire to quit). On the fifth item, participants endorsed one abstinence goal ranging from “no goal” to “total abstinence-never use cigarettes again” and were classified as: 1) endorsing total abstinence or 2) endorsing any goal other than complete abstinence.

Participants were also asked their level of motivation to quit on a 10-point Likert scale (1=not motivated; 10 = extremely motivated) and to complete the Contemplation Ladder which assesses thoughts and behavior related to making a quit attempt (1=no thought of quitting; 10=taking action to quit (e.g., setting a quit date)). Statistical analyses.

Smoking, risk and benefit beliefs, and motivation items were compared by demographic variables (gender, age, ethnicity, education) using chi-square tests for categorical data and t-tests for continuous data. Linear and logistic regressions were used to examine the relationship of quit motivation to risks and benefits of quitting. The five Likert scale motivation items and the Contemplation Ladder were examined separately using linear regressions and the abstinence goal item of the TAAS was examined through a forward Wald logistic regression. For all regressions, demographic variables (gender, age, ethnicity, education) and smoking variables found by zero-order correlation to be associated with risks and benefits (FTND, years of daily smoking) were entered as a block on the first step as control variables. Zero-order correlations were examined to determine which risk and benefit subscales were related to treatment motivation. Three subscales (Finances, Difficulty Attending or Concentrating, and Social Ostracism) were not consistently and significantly correlated with motivation items. The nine subscales significantly correlated with motivation were entered in a stepwise fashion on the second step of all regressions. Adjusted R^2s are reported for linear regressions and Nagelkerke R^2 is reported for the logistic regression. Analyses were repeated to determine whether there were significant interaction effects of perceived risks and benefits with demographic variables (gender, age, ethnicity, education).

RESULTS

Demographic and smoking variables (Table 1)

One hundred eighty-eight daily cigarette smokers (57.4% male; 54.1% Caucasian) completed all assessment measures. See Table 1 for demographic and smoking variables. Participants smoked a little less than a pack of cigarettes per day on average and only half reported a lifetime quit attempt.

Men reported later smoking onset than women (Male M=17.1, SD=3.0; Female M=15.9, SD=3.0; $p<0.05$). There were no significant differences in daily smoking, nicotine dependence, education, or ethnicity by gender. African-American smokers reported smoking fewer CPD (M=15.3, SD=7.1) than Caucasian smokers (M=19.5, SD=7.3; $p=0.001$). Older smokers (over the age of 30) reported smoking more cigarettes per day (Younger M=16.5, SD=7.0; Older M=19.2, SD=8.0; $p<0.05$) and higher levels of nicotine dependence (Younger M=4.7 SD=2.3; Older M=5.8, SD=1.9; $p<0.05$) than younger (≤30 years of age) smokers. There were no other significant differences on demographic or smoking variables by age, ethnicity, or education.

Perceived risks and benefits of quitting and treatment motivation (Table 1)

See Table 1 for endorsement of risks and benefits of quitting smoking. Women reported stronger beliefs in weight gain risks than men (Female M=4.8, SD=1.5; Male M=4.2, SD=1.3; $p<0.01$). Older smokers were more likely to endorse risks related to social ostracism (Younger M=3.4, SD=1.4; Older M=3.8, SD=1.3; $p<0.05$), weight gain (Younger M=4.1, SD=1.4; Older M=4.8, SD=1.4; $p=0.001$), and physical appeal (Younger M=5.3, SD=1.1; Older M=5.7, SD=1.1; $p<0.05$). There were no differences on other risks or benefits of quitting by gender, age, ethnicity, or education (ps>0.05).

Participants expressed moderate levels of desire to quit, expected difficulty with quitting, expected success at quitting, motivation to quit, and confidence in ability to quit (see Table 1). Few participants reported a goal of complete abstinence (13.9%). There were no

differences in motivation or abstinence goal by gender, age, ethnicity, or education ($ps>0.05$).

Association of beliefs in risks and benefits of smoking cessation with aspects of treatment motivation

See Table 2 for a summary of the risk and benefit beliefs that were significantly associated with motivation items. Beliefs in increased self esteem with quitting were positively correlated to desire to quit, expected success at quitting, confidence in quitting, motivation to quit, and higher report of quit-related thoughts and behaviors. A greater perception of increased negative affect after quitting related to decreased expected success, decreased confidence in ability to quit, and greater expected difficulty remaining abstinent. Greater concerns about weight gain were significantly associated with having a goal other than complete abstinence. In general, perceived risks of quitting were negatively related to motivation and perceived benefits of quitting were positively related to motivation to quit. The only exception was that the belief in increased well-being with abstinence was related to the expectation of more difficulty remaining abstinent. There were no significant interactions of perceived risks and benefit beliefs and gender, age, ethnicity, or education on treatment motivation.

DISCUSSION

In non-treatment seeking smokers, the expectation of increased self esteem after quitting smoking, and concerns about abstinence-related negative affect, cravings, and weight gain were related to quit motivation. These results highlight important beliefs about the risks and benefits of quitting smoking related to treatment motivation for an under-studied group of smokers.

Self esteem related to quitting smoking (e.g., “I will feel proud that I was able to quit”) was related to quit motivation consistent with previous research showing that self efficacy for quitting (i.e., the belief that one can quit smoking) is positively related to quit motivation (Martin et al., 2006) and smoking cessation success (Perez et al., 2008; Turner et al., 2008). Similarly, a negative relationship between concerns about weight gain, negative affect, and cravings and quit motivation to is consistent with research showing that these factors are associated with smoking relapse [e.g., (Borrelli et al., 2001; Piasecki, 2006)].

Contrasting previous research [e.g., (Curry et al., 1997; McKee et al., 2005; Sorensen & Pechacek, 1987; Toll et al., 2008)], few gender differences were found for risks and benefits of quitting and treatment motivation. McKee et al (McKee et al., 2005) found that women more strongly endorsed perceived risks and benefits of quitting and showed a stronger relationship between perceived risks and smoking cessation outcome. Gender differences for risks and benefits may differ by treatment motivation. For example, weight gain has often been raised as a specific concern for female smokers (Perkins, 2001; Schnoll et al., 2007), but there were no gender differences in the association between weight gain concerns and treatment motivation. Weight concerns may be a variable which has a similar relationship to motivation for men and women who smoke and becomes a more prominent concern for women attempting to quit. A study directly comparing the risks and benefits of male and female treatment seeking and non-treatment seeking smokers is needed to clarify this relationship.

Compared to treatment seeking smokers (McKee et al., 2005), non-treatment seeking smokers report lower levels of endorsement of risks and benefits of quitting. In McKee et al’s (McKee et al., 2005) analysis, benefits such as self esteem were not related to motivation; however, participants had an overall high level of endorsement of all benefits of

quitting with little variability in this measure. It is unknown whether non-treatment seeking smokers would report increased endorsement of risks and benefits as they move toward contemplating a quit attempt. Future studies directly comparing treatment and non-treatment seeking smokers which follows non-treatment seeking smokers longitudinally would help clarify differences between these groups.

Learning more about the risks and benefits that relate to motivation can help when designing campaigns targeted to increase quit motivation in non-treatment seekers. Within health promotion research, it has been suggested that messages aimed at health behavior change may work best when targeting specific subgroups engaging in the behavior (Latimer et al., 2007). For example, treatment seeking female smokers with low risk perceptions of quitting provided with positively framed (i.e., emphasizing the benefits of quitting) messages had a longer period of abstinence than those provided with negatively framed (i.e., emphasizing the harmful effects of smoking) messages (Toll et al., 2008). Consequently, campaigns that focus on the self-esteem benefits by promoting messages that smokers will feel better about themselves if they quit smoking may increase desire, confidence, and motivation to quit in non-treatment seeking smokers. Efforts that focus on the self-esteem benefits of quitting and the risks of weight gain, cravings, and negative affect may help to strengthen these smokers' desire to quit and lead to increased smoking cessation efforts among this group of smokers.

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REFERENCES

Borrelli B, Spring B, Niaura R, Hitsman B, Papandonatos G. Influences of Gender and Weight Gain on Short-Term Relapse to Smoking in a Cessation Trial. Journal of Consulting & Clinical Psychology. 2001; 69(3):511–515. [PubMed: 11495180]

CDC. Cigarette smoking among adults - United States, 2000. Morbidity and Mortality World Report (MMWR). 2002; 51:642–645.

CDC. Cigarette Smoking Among Adults - United States, 2006. Morbidity and Mortality World Report (MMWR). 2007; 56(44):1157–1161.

Curry SJ, Grothaus L, McBride C. Reasons for quitting: Intrinsic and extrinsic motivation for smoking cessation in a population-based sample of smokers. Addictive Behaviors. 1997; 22(6):727–739. [PubMed: 9426790]

Hall SM, Havassy BE, Wasserman DA. Effects of commitment to abstinence, positive moods, stress, and coping on relapse to cocaine use. Journal of Consulting & Clinical Psychology. 1991; 59:526–532. [PubMed: 1918556]

Heatherton TF, Kozlowski LT, Frecker RC, Fagerstrom KO. The Fagerstrom Test for Nicotine Dependence: a revsision of the Fagerstrom Tolerance Questionnaire. Br. J. Addictions. 1991; 86:1119–1127.

Latimer AE, Salovey P, Rothman AJ. The effectiveness of gain-framed messages for encouraging disease prevention behavior: is all hope lost? Journal of Health Communication. 2007; 12(7):645–649. [PubMed: 17934941]

Martin RA, Rohsenow DJ, MacKinnon SV, Abrams DB, Monti PM. Correlates of motivation to quit smoking among alcohol dependent patients in residential programs. Drug and Alcohol Dependence. 2006; 83:73–78. [PubMed: 16314049]

McKee SA, O'Malley SS, Salovey P, Krishnan-Sarin S, Mazure C. Perceived risk and benefits of smoking cessation: Gender-specific predictors of motivation and treatment outcome. Addictive Behaviors. 2005; 30:423–425. [PubMed: 15718060]

Perez GH, Nicolau JC, Romano BW, Laranjeira R. Depression: a predictor of smoking relapse in a 6-month follow-up after hospitalization for acute coronary syndrome. European Journal of Cardiovascular Prevention & Rehabilitation. 2008; 15(1):89–94. [PubMed: 18277192]

Perkins KA. Smoking cessation in women: Special considerations. CNS Drugs. 2001; 15(5):391–411. [PubMed: 11475944]

Piasecki TM. Relapse to smoking. Clinical Psychology Review. 2006; 26(2):196–215. [PubMed: 16352382]

Schnoll RA, Patterson F, Lerman C. Treating tobacco dependence in women. Journal of Women's Health. 2007; 16(8):1211–1218.

Sorensen G, Pechacek TF. Attitudes toward smoking cessation among men and women. Journal of Behavioral Medicine. 1987; 10(2):129–137. [PubMed: 3612774]

Szklo AS, Otero UB. Profile of smokers not searching for smoking cessation intervention in Rio de Janeiro, Brazil. Revista de Saude Publica. 2008; 42(1):139–142. [PubMed: 18200351]

Toll BA, Salovey P, O'Malley SS, Mazure C, Latimer A, McKee SA. Message framing for smoking cessation: The interaction of risk perceptions and gender. Nicotine & Tobacco Research. 2008; 10(1):195–200. [PubMed: 18188760]

Turner LR, Mermelstein R, Hitsman B, Warnecke RB. Social support as a moderator of the relationship between recent history of depression and smoking cessation among lower-educated women. Nicotine & Tobacco Research. 2008; 10(1):201–212. [PubMed: 18188761]

Weinberger AH, Krishnan-Sarin S, Mazure CM, McKee SA. Relationship of perceived risks of smoking cessation to symptoms of withdrawal, craving, and depression during short-term smoking abstinence. Addictive Behaviors. 2008; 33:960–963. [PubMed: 18384974]

Table 1

Demographic and smoking characteristics of the sample of non-treatment seeking daily cigarette smokers.

	Full sample n=188
Demographic Variables	
Gender	
Male	57.4%
Female	42.6%
Age (years)	31.9 ± 10.2
Ethnicity	
White	54.1%
Black	30.3%
Hispanic	4.9%
Other	10.8%
Education	
HS or Less	46.5%
Some college or more	53.5%
Smoking Variables	
Cigarettes per day	17.8 ± 7.6
FTND score	5.2 ± 2.2
Age of first cigarette (years)	15.1 ± 3.0
Age of onset of daily smoking (years)	16.6 ± 3.0
Percent who report ever intentionally trying to quit smoking for one day or more.	54.6%
PRBQ Risk Subscales	
Attention/Concentration	3.4 ± 1.3
Craving	5.4 ± 1.3
Loss of Enjoyment	4.8 ± 1.6
Negative Affect	4.3 ± 1.4
Social Ostracism	3.7 ± 1.4
Weight Gain	4.4 ± 1.4
Total Risks	4.2 ± 1.0
PRBQ Benefit Subscales	
Health	5.9 ± 1.1
General Well-Being	5.5 ± 1.1
Self-Esteem	5.4 ± 1.1
Finances	6.2 ± 1.1
Physical Appeal	5.5 ± 1.1
Social Approval	5.6 ± 1.1
Motivation items	

	Full sample n=188
Demographic Variables	
Desire to Quit	4.8 ± 2.6
Expected Success at Quitting	4.5 ± 2.8
Expected difficulty of remaining abstinent	7.4 ± 2.2
Confidence in Quitting	5.6 ± 2.5
Percent reporting complete abstinence as their goal for quitting smoking.	13.9%
Motivation to Quit	5.6 ± 2.5
Contemplation Ladder	4.5 ± 2.3

Key: HS, high school; FTND, FagerstrÖm Test for Nicotine Dependence; PRBQ, Perceived Risks and Benefits Questionnaire; TAAS, The Thoughts about Abstinence Scale

Note: Response scale for PRBQ: 1=no chance, 7=certain to happen. Response Scale for Contemplation Ladder: 1=No thought of quitting, 5=Think I should quit but not quite ready, 10=Taking action to quit (e.g., setting a quite date).

Table 2

Summary of significant perceived risks and benefits related to aspects of motivation to quit smoking in non-treatment seeking smokers (n=188).

	β	*t*/Wald	Total R^2	*p*-value
Desire to Quit				
Self Esteem (B)	0.30	4.10		
			0.08	$p<0.001$
Expected Success at Quitting				
Self Esteem (B)	0.44	6.08		
Negative Affect (R)	−0.27	−3.75		
			0.20	$p<0.001$
Expected difficulty of remaining abstinent.				
Craving (R)	0.38	2.08		
General Well-Being (B)	0.18	2.37		
Negative Affect (R)	0.20	2.31		
			0.19	$p<0.001$
Confidence in Quitting				
Self Esteem (B)	0.38	5.19		
Negative Affect (R)	−0.23	−3.08		
			0.16	$p<0.001$
Abstinence as goal for quitting smoking.				
Weight Gain (R)	−0.36	−3.97		
			0.14	$p<0.05$
Motivation to Quit				
Self Esteem (B)	0.41	5.18		
Craving (R)	−0.23	−2.93		
			0.14	$p<0.001$
Contemplation Ladder				
Self Esteem (B)	0.31	4.01		
			0.08	$p<0.001$

Key: B, Benefit; R, Risk

Notes: All analyses controlled for gender, age, ethnicity, education, duration of smoking, and nicotine dependence (i.e., Fagerström Test for Nicotine Dependence score). Risk (Weight Gain, Negative Affect, Loss of Enjoyment, Craving) and benefit (Health, General Well-Being, Self Esteem, Physical Appeal, Social Approval) subscales that were significantly correlated with motivation were included as potential predictors. Only significant predictors are shown in the table.