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Correlates of Tobacco Dependence and Motivation to Quit among Young People Receiving Mental Health Treatment

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Abstract

Background—Young people with mental health concerns are at high-risk for initiation and continuation of tobacco use. To inform treatment needs, the current study sought to describe tobacco dependence, motivations to quit and associated sociodemographic factors among young people seen in mental health settings.

Methods—Sixty adolescent and young adult smokers (age mean=19.1 years, range 13-25) receiving outpatient mental health treatment completed measures of tobacco dependence, motivation to quit smoking, mental health, and social environmental factors.

Results—Participants averaged 8.0 cigarettes per day (SD=6.6) and moderate nicotine dependence (mFTQ M=4.8, SD=1.6). Participants' mean rating (10-point scales) of perceived difficulty with avoiding relapse during a quit attempt was significantly higher (M=6.7, SD=2.6), than ratings of desire (M= 5.1, SD=2.6) and perceived success (M=4.6, SD=2.6) with quitting. Over half (52%) did not intend to quit smoking in the next 6 months, and few (11%) were prepared to quit in the next 30 days. Mental health treatment and symptomatology measures were unrelated to level of dependence or motivation to quit. Among the social environmental factors, having close friends who smoke was associated with greater perceived difficulty with avoiding relapse during a quit attempt ($r=0.25$, $p<0.01$).

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Contributors

Dr. Grana led the study idea, analyses, and manuscript writing. Dr. Prochaska provided mentoring on all aspects of the project (study idea, analyses, manuscript revisions) and led the trial from which the data were collected. Dr. Ramo contributed to refining the study hypotheses and revising the manuscript. Drs. Hall and Fromont contributed to the design and implementation of the trial from which the data were collected and provided feedback on the manuscript.

Conflict of Interest

This study was not supported, either directly or indirectly, by pharmaceutical or tobacco companies. Unrelated to the study reported here, Drs. Sharon Hall and Judith Prochaska have received research awards from Pfizer, Inc. All other authors declare they have no conflicts of interest.

Conclusions—In this sample of adolescent and young adult smokers in mental health treatment, moderate levels of tobacco dependence and motivation to quit were observed and found to be unrelated to mental health measures. Over half of the sample was not intending to quit smoking in the near future, supporting the need for treatment strategies aimed at increasing motivation.

Keywords

adolescent; young adult; tobacco; mental health; smoking; quitting; cessation

1. Introduction

Youth in adolescence and the transitional period from adolescence to young adulthood continue to initiate tobacco use and smoke in significant numbers. According to the 2009 US National Survey on Drug Use and Health survey, smoking in the past month was reported by 16.8% of late adolescents (16-17 years old) and 35.8% of young adults (18-25); the latter being the highest smoking rate among all age groups (Substance Abuse and Mental Health Services Administration, 2010).

Quitting smoking in early adulthood greatly reduces one's chances of developing a tobacco-related disease or dying prematurely due to tobacco use. Specifically, about 90% of the morbidity and mortality caused by tobacco use can be prevented by quitting before the age of 30 (Doll et al., 2004). While cessation pharmacotherapy is a central treatment component for adult smokers, the benefits of medication use with youth have not been well demonstrated (Fiore et al., 2008). Further, studies indicate young adult smokers are unlikely to seek out and use existing evidence-based methods for quitting smoking (Curry et al., 2007; Hughes et al., 2009). A greater understanding of young people's smoking behavior and motivations to quit are needed to inform new treatment paradigms.

Youth with mental health concerns, such as depression and anxiety, attention-deficit hyperactivity disorder (ADHD), conduct disorder, other substance use disorders, and trauma-exposure are at particularly high risk for smoking initiation, continued use, and the development of nicotine dependence (Roberts et al., 2008; Johnson et al., 2000; Kandel et al., 1997; Milberger et al., 1997; Myers and Brown, 2005; Patton et al., 1996; Upadhyaya et al., 2003; Upadhyaya et al., 2005). Among adolescents with peers who smoke, depression and anxiety contribute to progression from experimental to regular smoking (Patton et al., 1998). In a national sample of adolescents followed through young adulthood, controlling for demographics and depressive symptoms, exposure to traumatic events increased the likelihood of lifetime regular smoking, was predictive of earlier age of regular smoking, and associated with greater nicotine dependence and heavier smoking (Roberts et al., 2008). Though at high risk for smoking, few tobacco treatment studies have included adolescents and young adults with comorbid mental health issues. Of the 48 published trials of smoking cessation treatment with youth included in a 2006 meta-analysis (Sussman et al., 2006), only one was conducted with adolescents with mental health disorders (Brown et al., 2003). The study intervention did not achieve significant effects on abstinence, but was associated with increased self-efficacy to quit smoking and greater intention to quit among participants who were less motivated at baseline (Brown et al., 2003).

The current study aimed to characterize, in a sample of young people in mental health treatment, level of tobacco dependence, motivation to quit, and associations with measures of mental health treatment and symptom severity. Given consistent findings in the literature for peer and parental influences on tobacco use (Flay, 1998), we also examined associations between tobacco dependence, motivation to quit, and social/environmental contextual factors.

2. Methods

2.1 Study Design and Procedures

Data were analyzed from the baseline assessment of a longitudinal, randomized smoking cessation trial. The intervention was tailored to stage of change, and youth did not have to want to quit smoking to participate. Over the course of the 12-month trial, participants could earn $120 in gift cards for their time and $40 for travel costs. The University of California, San Francisco Institutional Review Board approved the study procedures. Informed consent was obtained from all participants aged 18 and older. Participants under age 18 provided informed assent and either parents or mental health providers provided informed consent on behalf of the youth. Parent consent was not required pursuant with California law (Cal. Family Code § 6929[c]) that permits treatment of substance use with youth ages 12 and older with medical provider approval.

2.2 Participants

Young people between the ages of 13 and 25 were recruited from 17 outpatient mental health settings in the San Francisco Bay area. Participants were recruited via direct referral from mental health providers and counselors and through study flyers posted in the clinical settings. The number of participants recruited per site ranged from 1 to 13 with the two largest sites contributing 25 of the 60 participants. The settings treated youth with a variety of diagnoses including mood, anxiety, adjustment, and conduct disorders, ADHD, and psychosis as well as co-occurring substance use disorders and trauma-exposure. Youth were eligible to enroll in the study if they were currently receiving mental health treatment at one of the recruitment sites and reported smoking at least 1 cigarette in the past 30 days and over 100 cigarettes in one's lifetime. Exclusion criteria included non-English speaking and current engagement in smoking cessation treatment.

2.3 Measures

2.3.1 Tobacco Measures—The Timeline Follow-back (TLFB) questionnaire was used to calculate cigarettes per day in the 30 days prior to baseline (Sobell and Sobell, 1992). Nicotine dependence was measured with seven items from the Modified Fagerström Tolerance Questionnaire (mFTQ) for use with adolescents (Prokhorov et al., 1996). Cessation attempts of 24 hrs or longer duration in the past year and lifetime were assessed. The 4-item stage of change scale (Prochaska and DiClemente, 1983) assessed smokers' readiness to quit smoking categorized as: 1) precontemplation (not intending to quit), 2) contemplation (intending to quit in the next 6 months), and 3) preparation (intending to quit in the next 30 days with a past year 24-hour quit attempt). The 4-item Thoughts About Abstinence (TAA; Hall et al., 1990) scale had participants indicate on a visual analog scale from 1-10 (1=lowest value and 10=highest value) how much they: 1) desired to quit smoking, 2) thought they would be successful at quitting, and 3) thought it would be difficult to remain abstinent from cigarettes if they did quit. The fourth question asked about the participant's goal for quitting smoking, coded as 0=no goal, 1=want to partially quit or reduce, or 2=want to quit completely (included were those with a goal to quit completely who thought it possible they may relapse).

2.3.2 Other drug use—The Timeline Follow-back (TLFB) questionnaire was used to capture any use of alcohol, marijuana, and other drugs (e.g., cocaine, ecstasy, prescription drugs) in the 30 days prior to baseline (coded yes=1, no=0; Sobell and Sobell, 1992).

2.3.3 Contextual variables—The following items measured peer, parent, and environmental exposure to tobacco use: peer smoking (how many of their five closest friends smoke, 0-5), parent smoking (coded 0=neither parent smokes, 1=one or more parents

smoke), and secondhand smoke exposure in the home and in the place they spend most of their time (both coded as 0=smoke free, 1= occasionally or usually smoky, 2=always smoky).

2.3.4 Mental health indicators—Participants reported the number of each of four types of mental health outpatient treatment visits in the past 30 days: medication management, individual therapy, group therapy, and case management. Outpatient visits for alcohol or drug use also were assessed and dichotomized (coded 1 = at least one visit or 0=no visits), because of the low number of visits in the sample. Depressive symptoms were assessed by the internalizing subscale of the Behavior Assessment System for Children (BASC-2) for participants <18 years of age and the depression and functioning subscale of the Behavior and Symptom Identification Scale (BASIS-24) for participants aged 18-25. Scale scores for both measures were standardized (i.e., z-scores) to allow for analyses across age groups. History of trauma was assessed by asking participants if they had ever experienced an event where: 1) they were physically injured, 2) someone else was physically injured, 3) they thought their life was in danger, or 4) thought that someone else's life was in danger. Additionally, they indicated if they felt helpless and/or terrified during the event. Participants who reported exposure to any of the four types of events and who reported feeling helpless and/or terrified were coded as trauma-exposed.

2.4 Statistical Analysis

All statistical procedures were conducted in IBM/SPSS v.18 statistical software. Means and frequencies were run to describe the sample, with bivariate statistical procedures (correlation, cross tabulations), independent sample t-tests, and one-way ANOVA used to test associations. Tukey post-hoc analysis was used for evaluation of differences among the three pre-action stages of change.

3. Results

3.1 Sample Description

The sample (N=60) had a mean age of 19.5 years (SD=2.9, Range: 13 to 25) and was 52% female. The sample was ethnically diverse with 41.6% Caucasian, 25.0% Hispanic/Latino, 15.0% multi-racial, 6.6% African American, 5.0% Asian, 6.4% other, and 1.6% American Indian/Alaska Native. All participants were receiving outpatient mental health treatment, with group or individual therapy visits comprising the greatest number of outpatient treatment encounters in the past month (median=3.0 group or individual visits). Mean (SD) scores on the BASC-2 internalizing and BASIS-24 depression scales for the older and younger subgroups were 53.71 (12.64) and 1.51 (0.76), respectively. Sixty-three percent of the sample was trauma-exposed, and trauma-exposure was associated with significantly greater depression/internalizing symptomatology (p=0.02). The prevalence of past month alcohol, marijuana and other illicit drug use was 58.3%, 50.0%, and 21.7%, respectively. Only 3 participants (5.1%) had an outpatient visit for alcohol or drug treatment in the past 30 days.

The sample smoked an average of 8.0 (SD=6.6) cigarettes per day and had a moderate level of nicotine dependence (M=4.8, SD=1.6). Most participants (63%) were daily smokers (i.e., smoked on at least 97% of the past 30 days). Over half the sample (52%) was in precontemplation, 37% was in contemplation, and 11% was in preparation. Participants had moderate levels of desire to quit (M=5.1, SD=2.6) and anticipated success with quitting (M=4.6, SD=2.6) and higher levels of expected difficulty with staying quit (M=6.7, SD=2.6). Paired-sample t-tests indicated that individuals' ratings of perceived difficulty were significantly higher than their ratings of desire (t=-3.26, p=0.002) and perceived

success with quitting (t=-3.86, p<0.001). Only 25.0% of the sample identified the goal of quitting smoking for good, 23.3% had no goal, and 51.7% had a goal to reduce consumption or quit for a limited period of time. Nearly half (46%) the sample had a parent who smoked; 50% described their home as smoke-free; only 27% described the place where they usually spend most of their time as smoke-free. On average, participants identified three of their five closest friends as current smokers (M=3.1, SD=1.7).

3.2 Correlates of Tobacco Dependence

Tobacco dependence, as measured by the mFTQ, was strongly correlated with cigarettes per day (r=0.64, p<0.001). Tobacco dependence (r=-0.32, p=0.01) but not cigarettes per day (r=-.21, p=0.11) was significantly inversely correlated with the number of lifetime quit attempts. The number of cigarettes smoked per day was significantly associated with abstinence goal (F=3.62, df=2, 57, p=0.03); participants with a goal for complete abstinence were the heaviest smokers (M=11.8, SD=7.17), those with a partial abstinence goal were the lightest (M=6.53, SD=5.99), and those with no goal smoked a M=7.11 (SD=6.24) cigarettes per day. Tobacco dependence was not associated with abstinence goal. Tobacco dependence and cigarettes per day also were unrelated to stage of change, the TAA measures of desire, perceived success, and difficulty, mental health severity, peer and parent smoking, secondhand smoke exposure, and other substance use (all p's>0.09).

3.3 Correlates of Thoughts about Abstinence and Stage of Change

Desire to quit smoking and expected success with quitting were significantly positively correlated (r=.38, p=0.002). Perceived difficulty was inversely correlated with expected success (r=-.37, p=0.004), but not desire to quit (r=.-06, p=0.96). Abstinence goal and desire to quit were significantly associated (F=8.93, df=2, 57, p<0.001); participants with a goal to quit completely reported greater desire to quit than those with no goal to quit (M=7.20, SD=2.06 and M=3.64, SD=1.97, respectively). Participants in the precontemplation stage had significantly lower desire to quit and anticipated less success with quitting relative to participants in contemplation or preparation (desire to quit, F=16.4, df=2, 57, p<0.001; expected success with quitting, F=8.58, df=2, 57, p=0.001, Figure 1). Perceived difficulty with staying quit did not vary significantly by stage of change. Stage of change was significantly associated with abstinence goal (χ^2=11.9, df=4, p=0.01), where participants in precontemplation were the most likely to have no abstinence goal, participants in preparation were the most likely to endorse a goal for complete abstinence, and those in contemplation favored a goal to partially quit or reduce (Figure 2).

Neither the number of outpatient mental health visits, level of depressive symptoms, history of trauma, or substance abuse treatment was significantly associated with stage of change, abstinence goal, or ratings of desire, success, or difficulty (all p>0.20). Past 30 day use of marijuana was associated with greater perceived difficulty with staying quit from tobacco (t=-2.05, p=0.03), and other illicit drug use was associated with lower expected success with quitting smoking (t=2.45, p=0.02).

In terms of social/environmental variables, having more close friends who smoked was positively associated with participants' perceived difficulty with staying quit (r=0.25, p<0.01), while parental smoking was unrelated (t=-1.73, p=.09). Participants' secondhand smoke exposure in the home and in the place where they spend most of their time were unrelated to measures of motivation to quit.

4. Discussion

The present study examined tobacco dependence, motivation to quit smoking, and associations with mental health and social/environmental variables in an understudied

population: adolescent and young adult smokers receiving outpatient mental health treatment. In this sample, nearly half were interested in quitting smoking, but a small percentage (11%) was preparing to quit in the next 30 days. Perceived difficulty with staying quit was significantly higher than ratings of desire to quit and anticipated success with quitting. Notably, intention to quit smoking and severity of nicotine dependence did not differ significantly by severity of depressive symptoms, exposure to trauma, or the frequency of mental health treatment.

Consistent with prior research with TAA and stages of change among adults, we found significant predicted associations (Acton et al., 2001; Prochaska et al., 2004b). Specifically, those in the stages of preparation and contemplation reported a greater desire to quit and expected greater success with quitting, than those in the precontemplation stages of change, while perceived difficulty with staying quit did not differ by stage. Further, endorsement of a complete abstinence goal was significantly associated with being in preparation. Those with a partial abstinence goal smoked the fewest cigarettes per day, which may reflect active efforts to restrict tobacco use. These findings suggest the measure is operating as theorized and is further evidence of the measure's validity with young adult smokers (Ramo et al., 2011). Notably, relative to studies with adult smokers in mental health treatment, the current sample of adolescents had higher ratings of perceived difficulty with staying quit, lower ratings of desire and perceived success, and fewer reported a commitment to complete abstinence (Acton et al., 2001; Hall et al., 2006; Prochaska et al., 2006; 2004b).

The lack of association between severity of psychiatric symptoms and motivation to quit smoking is consistent with prior research among adults receiving mental health treatment. In studies of adult psychiatric outpatients, participants' severity of depressive symptoms were unrelated to baseline stage of change, engagement in cessation services, and abstinence status at follow-up (Hall et al., 2006; Haug et al., 2005; Prochaska et al., 2004b). Several studies also have demonstrated the feasibility and effectiveness of treating tobacco dependence among samples of adult smokers with mental health issues without harm to their mental health recovery (Hall and Prochaska, 2009; Hall et al., 2006; McFall et al., 2006; Prochaska et al., 2008). Similar tobacco treatment outcome research with adolescent and young adult samples is needed. Notably, while rates of trauma-exposure were high in the current sample (63% screened positive), trauma-exposure also was unrelated to severity of tobacco use, nicotine dependence, or intentions to quit.

Our findings of greater perceived difficulty with staying quit from tobacco among youth using marijuana and lower perceived success with quitting among youth with other illicit drug use indicate that concurrent use of tobacco and other substances may be an important factor to address to increase anticipated success with quitting and cessation goal setting. Previous research with adults and youth indicates that treating both tobacco and other substance use simultaneously may have an increased positive effect on abstinence from both substances (Brown et al., 2009; Myers and Prochaska, 2008; Prochaska et al., 2004a).

Of the contextual correlates examined in the present study, peer smoking was identified as a perceived barrier to quitting, whereas parental smoking and secondhand smoke exposure were not associated with measures of motivation to quit. Peer relationships may be more influential among young smokers, who are in a developmental period where less time is spent with family and more time is spent socializing with peers (Arnett, 2000).

The current study is limited by small sample size, which limits the generalizeability of the findings and the statistical power to detect effects or examine developmental differences. Further, the youth who participated represent a small proportion of those served by the treatment sites. The analyses focused on psychiatric symptoms (depression, trauma,

substance use) rather than clinical diagnoses, a decision made by the study investigators in consultation with the two largest recruitment sites with the rationale of avoiding stigma and labeling. It was presumed that any young person receiving treatment at one of the outpatient mental health settings would have a mental health concern and global measures of psychiatric symptomatology (BASIS-24, BASC-2) and interpersonal strengths (BASC-2) were used.

Despite these limitations, the current study provides insight into the motivations and cessation intentions of young smokers with mental health concerns. Taken together, the present study findings, particularly the low proportion of participants with a complete abstinence goal or in the preparation stage of change, support the use of motivationally-oriented interventions to encourage cessation efforts. As found in the adult literature, psychiatric symptom severity was unrelated to youth's motivation to quit. Hence, the findings support tailoring of smoking cessation treatment to stage of change and thoughts about abstinence rather than tailoring to mental health symptoms. Additionally, addressing other substance use and the impact of peer's smoking appear to be important for treatment of tobacco dependence in this group.

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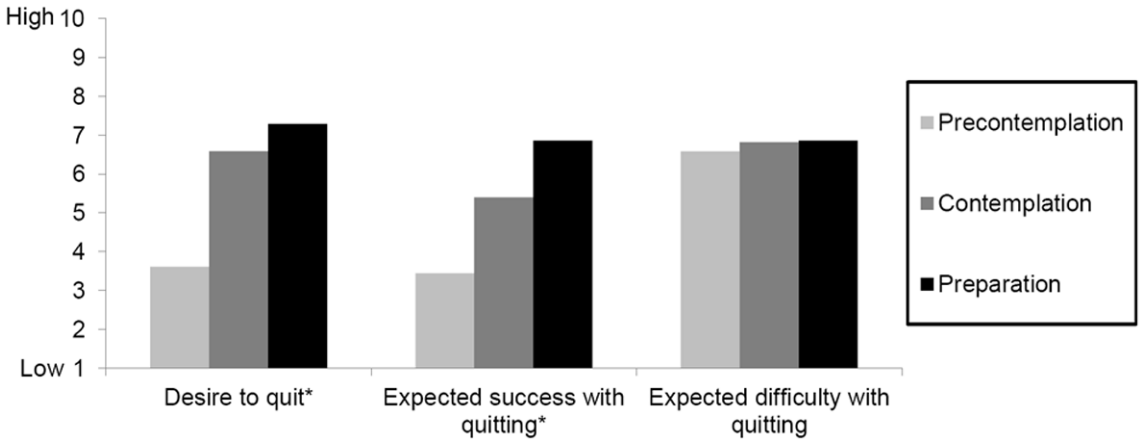

Figure 1. ANOVA of Thoughts about Abstinence Measures by Stage of Change (N=60)
*significant ($p<0.01$) between people in stages precontemplation vs. contemplation and precontemplation vs. preparation.

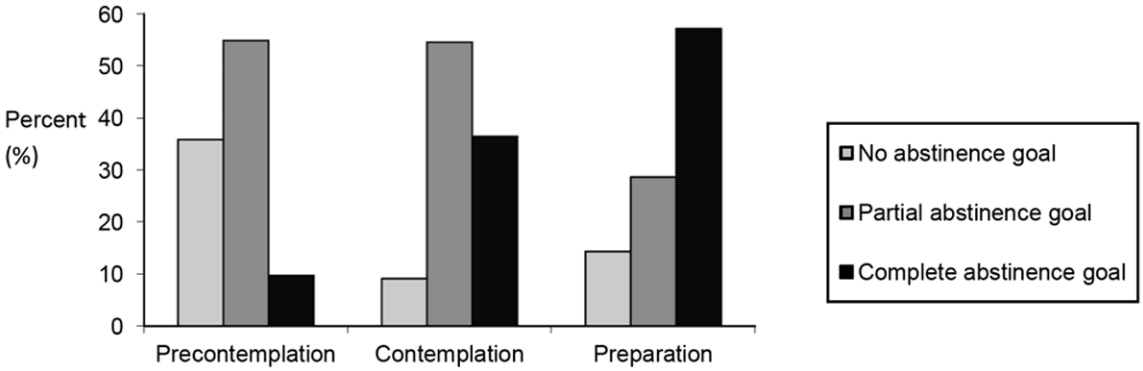

Figure 2. Stage of Change and Abstinence Goal (N=60)
χ^2=11.9, df=4, p=0.01