



Big five personality factors and cigarette smoking: A 10-year study among US adults



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ABSTRACT

The present study examined the relation between the big five personality traits and any lifetime cigarette use, progression to daily smoking, and smoking persistence among adults in the United States (US) over a ten-year period. Data were drawn from the Midlife Development in the US (MIDUS) I and II (N = 2101). Logistic regression was used to examine the relationship between continuously measured personality factors and any lifetime cigarette use, smoking progression, and smoking persistence at baseline (1995–1996) and at follow-up (2004–2006). The results revealed that higher levels of openness to experience and neuroticism were each significantly associated with increased risk of any lifetime cigarette use. Neuroticism also was associated with increased risk of progression from ever smoking to daily smoking and persistent daily smoking over a ten-year period. In contrast, conscientiousness was associated with decreased risk of lifetime cigarette use, progression to daily smoking, and smoking persistence. Most, but not all, associations between smoking and personality persisted after adjusting for demographic characteristics, depression, anxiety disorders, and substance use problems. The findings suggest that openness to experience and neuroticism may be involved in any lifetime cigarette use and smoking progression, and that conscientiousness appears to protect against smoking progression and persistence. These data add to a growing literature suggesting that certain personality factors—most consistently neuroticism—are important to assess and perhaps target during intervention programs for smoking behavior.

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1. Introduction

There are over 1 billion cigarette smokers in the world (World Health Organization, 2008) and approximately 45.3 million of these smokers reside in the United States (US) (Centers for Disease Control and Prevention, 2011). Estimates suggest 21.5% of men and 17.3% of women in the US are current smokers and 78% of these people are daily smokers (Centers for Disease Control and Prevention, 2012). In the 20th century alone, an estimated 100 million people have died from smoking-related illnesses worldwide, and the number could increase unless urgent action is

taken to develop effective smoking-based intervention programs (World Health Organization, 2008). To enhance smoking-based prevention and treatment success, programs are increasingly designed to match interventions to individual and social risk factors for smoking (e.g., motivation to change, psychiatric history) (Velicer et al., 1993; Ziedonis et al., 2008).

Personality factors, reflecting individual differences in enduring psychological traits (Clark, 2005; Costa and McCrae, 1992), have been the subject of sustained attention in terms of their role in smoking behavior (Booth-Kewley and Vickers, 1994; Eysenck, 1983; Gilbert, 1995; Leventhal and Cleary, 1980; Munafo et al., 2007; Smith, 1970). Indeed, specific personality traits, such as neuroticism, are often associated with cigarette smoking (Goodwin and Hamilton, 2002; Kubicka et al., 2001; Welch and Poulton, 2009). Although past work explored many definitions and models of personality, the Five-Factor Model (FFM) has been a highly

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influential and increasingly well-accepted model of personality dimensions (Goldberg, 1990; John, 1990; McCrae and Costa, 1997). The FFM posits that personality traits are comprised of five higher-order factors, including neuroticism (tendency to experience negative emotions), extraversion (sociability and assertiveness), openness to experience (creativity, adventurousness, and receptivity to new ideas), agreeableness (degree to which behavior is generally considered compliant and cooperative), and conscientiousness (self-discipline and organization) (McCrae and Costa, 1997; McCrae and Terracciano, 2005). These five higher-order traits are heritable, highly stable over time, and are evident across diverse social contexts (McCrae and Costa, 1997).

Personality-oriented smoking research has documented numerous clinically important, albeit not fully consistent findings (Kassel et al., 2003). Although numerous methodological factors (e.g., sampling tactics, measurement approaches, time periods of assessment, models of personality being employed) are apt to play a major role in these discrepant results, there are nevertheless some points of notable convergence. For example, daily smokers compared to former and never smokers tend to be higher in neuroticism (Gilbert, 1995; Kahler et al., 2009; Terracciano and Costa, 2004; Vollrath and Torgersen, 2002). Higher levels of neuroticism are reliably associated with mood management reasons for smoking (Gonzalez et al., 2008) as well as poorer cessation outcomes (Piasecki et al., 1997). Other work has found relatively consistent empirical evidence that smoking initiation in adulthood is predicted by lower levels of conscientiousness (Kubicka et al., 2001); a pattern of findings that is consistent with the broader health behavior literature (Booth-Kewley and Vickers, 1994). Results across a diverse array of studies also suggest that lower levels of agreeableness are often associated with smoking (Malouff et al., 2006). In addition, some studies have found that cigarette smokers also have higher levels of extraversion (Harakeh et al., 2006; Malouff et al., 2006; Munafo and Black, 2007) and openness to experience (Leung et al., 2013) than non-smokers, but the findings are largely inconsistent.

Although promising, past personality-smoking research has not comprehensively examined the FFM in regard to lifetime cigarette use, smoking progression, and smoking persistence in one model over extended periods among adults in the community. In addition, depression and anxiety disorders overlap with some personality factors, such as neuroticism (Brown and Barlow, 2009), that have shown arguably the most consistent relations to smoking. Depression and anxiety disorders are also frequently co-occurring with smoking and nicotine dependence (Ziedonis et al., 2008). Yet, previous studies have not examined the impact of the FFM on smoking while taking into account the potential confounding effects of depression/anxiety disorders. Likewise, substance use problems are often related to smoking (Eckhardt et al., 1994) and specific personality factors (Kotov et al., 2010) yet past work has infrequently adjusted for these potential confounds.

Overall, by gaining a better understanding of how personality influences smoking behavior, it may be possible to improve our ability to implement more effective interventions for smoking prevention and cessation. As such, the purpose of the current study was threefold. First, we examined the relation between FFM personality factors and any lifetime cigarette use over a ten-year period in adulthood. Second, we examined the association between FFM personality factors and progression from any cigarette use to daily smoking. Third, we investigated the relationship between FFM personality factors and persistence of daily smoking over a ten-year period among adults in the US. For all analyses, we adjusted for demographic characteristics, depression, anxiety disorders, and substance use problems.

2. Methods

Data were drawn from the two waves of the Midlife Development in the United States (MIDUS), a national survey of Americans in adulthood that investigated behavioral, psychological, and social factors related to physical and mental health (Brim et al., 2010). The MacArthur Midlife Research Network collected Wave I data from 1995 to 1996 and Wave II data from 2004 to 2006. Wave I consisted of a nationally representative multistage probability sample (main sample) of community-dwelling English speakers in the continental United States ($n = 3032$). Participants who completed the telephone interview (response rate = 70%) were mailed a self-administered questionnaire. The response rate from the mailed questionnaire was 86.6%, yielding a response rate of 61% ($0.70 \times 0.87 = 0.61$) for Wave I. Of the 3032 participants from Wave I, 2101 completed the Wave II telephone surveys (response rate of 69.5%) which was collected by the Institute on Aging at the University of Wisconsin–Madison and supported by the National Institute on Aging (2004–2006). Wave II participants completed a 30-min telephone interview and a self-administered questionnaire was mailed to them. For this study, we analyzed only data from those who participated in the Wave I main sample who completed both the phone and mail-in surveys, participated in the Wave II survey, and had complete information for Wave II outcome variables ($N = 2101$).

2.1. Measures

2.1.1. Personality traits

Assessment of personality traits in the Midlife Development Inventory Personality Scales (MIDI) was based on the ‘big five’ factor model (John, 1990). Its development was based on the results of a pilot study conducted in 1994 with a probability sample of 1000 men and women, aged 30–70 (574 valid cases were usable for item analysis) (Lachman and Weaver, 1997). Items with the highest item to total correlations and factor loadings were selected for the MIDI (Gonzalez et al., 2008; Kassel et al., 2003; Malouff et al., 2006; Vollrath and Torgersen, 2002). Forward regressions were also run to determine the smallest number of items needed to account for over 90% of the total scale variance. Many of the negatively worded items (unemotional, unreliable, unsophisticated, unsympathetic, shy, unsociable) were dropped due to low variance. New items were added to increase reliabilities on some scales. Scales included agreeableness (helpful, warm, caring, softhearted, sympathetic) ($\alpha = 0.80$), 5-item scale; openness to experience (creative, imaginative, intelligent, curious, sophisticated, adventurous) ($\alpha = 0.77$), 7-item scale; conscientiousness (organized, responsible, hardworking, (not) careless) ($\alpha = 0.58$), 4-item scale; extraversion (outgoing, friendly, lively, active, talkative) ($\alpha = 0.78$), 5-item scale; neuroticism (moody, worrying, nervous, (not) calm) ($\alpha = 0.74$) 4-item scale. Responses were on a Likert-scale from 1 to 4, asking participants to describe how much of the time the particular word described them. The scale ranged from ‘all the time’, ‘most of the time’ and ‘sometimes’ to ‘a little’. For each trait, the score for each case was computed by finding the mean of the relevant personality items for cases that had valid values for at least half of the items for that trait. The alphas are based on the MIDUS sample at Wave I ($n = 3032$).

2.1.2. Cigarette smoking

At Waves I and II, all participants were asked whether they had ever smoked a cigarette. Those who responded in the affirmative were considered to have lifetime cigarette use and were compared to individuals who reported no lifetime cigarette use in current analyses. Those with cigarette use at Wave I were also asked, “Do you smoke regularly now—that is at least a few cigarettes a day?” at Waves I and II. Those who responded in the affirmative only at

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