



Do time perspective and sensation-seeking predict quitting activity among smokers? Findings from the International Tobacco Control (ITC) Four Country Survey

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HIGHLIGHTS

- ▶ Personality traits have previously been shown to predict smoking-related behaviors.
- ▶ Time perspective has not been extensively studied as a predictor of quit attempts.
- ▶ We found that a future-oriented time perspective predicted increased quit attempts.
- ▶ The association between time perspective and quit attempts was invariant by country.

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ABSTRACT

Personality factors such as time perspective and sensation-seeking have been shown to predict smoking uptake. However, little is known about the influences of these variables on quitting behavior, and no prior studies have examined the association cross-nationally in a large probability sample. In the current study it was hypothesized that future time perspective would enhance – while sensation-seeking would inhibit – quitting activity among smokers. It was anticipated that the effects would be similar across English speaking countries. Using a prospective cohort design, this cross-national study of adult smokers ($N = 8845$) examined the associations among time perspective, sensation-seeking and quitting activity using the first three waves of data gathered from the International Tobacco Control Four Country Survey (ITC-4), a random digit dialed telephone survey of adult smokers from the United Kingdom, United States, Canada and Australia. Findings revealed that future time perspective (but not sensation-seeking) was a significant predictor of quitting attempts over the 8-month follow-up after adjusting for socio-demographic variables, factors known to inhibit quitting (e.g., perceived addiction, enjoyment of smoking, and perceived value of smoking), and factors known to enhance quitting (e.g., quit intention strength, perceived benefit of quitting, concerns about health effects of smoking). The latter, particularly intention, were significant mediators of the effect of time perspective on quitting activity. The effects of time perspective on quitting activity were similar across all four English speaking countries sampled. If these associations are causal in nature, it may be the case that interventions and health communications that enhance future-orientation may foster more quit attempts among current smokers.

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1. Introduction

A long history of empirical research has linked personality traits with smoking. Of the personality dimensions investigated,

impulsivity and sensation-seeking have both been shown to predict smoking status and initiation (Kahler et al., 2009; Lipkus, Barefoot, Williams, & Siegler, 1994; Mitchell, 1998; Perkins et al., 2008; Perkins, Gerlach, Broge, Grobe, & Wilson, 2000; Spillane, Smith, & Kahler, 2010; Zuckerman, Ball, & Black, 1990). Additionally, studies have linked these traits with quitting-related behaviors, generally showing that higher impulsivity and sensation-seeking are associated with less maintenance of cessation over time (Doran, Spring, McChargue, Pergadia, & Richmond, 2004; Krishnan-Sarin et al.,

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2007; Perkins et al., 2008; Vanderveen, Cohen, Cukrowicz, & Trotter, 2008).

In part, impulsivity and sensation seeking have been of interest in relation to smoking because they suggest that a hyper-responsivity to the rewarding qualities of smoking (or tobacco specifically) might be responsible for inter-individual variability in susceptibility to addiction. Prior studies confirming such empirical links continue to be of interest to researchers and practitioners alike, but for different reasons. Researchers have found the possibility of physiologically-based personality traits to be conceptually interesting when considering the etiology of addictive processes, while practitioners have been drawn in by the prospect of tailoring interventions to the characteristics of individuals or groups based on such personality factors. Given the precedent set by sensation-seeking and impulsivity, they are currently the benchmark by which other personality dimensions must be compared when predicting smoking-related behaviors and outcomes.

1.1. Time perspective

One individual difference variable that has been relatively understudied in the domain of smoking is *time perspective*. Time perspective can be defined as the tendency to consider and value present versus future consequences of one's own actions (Fong & Hall, 2003; Strathman, Gleicher, Boninger, & Edwards, 1994; Zimbardo & Boyd, 1999). Those with a present-oriented time perspective are primarily oriented to immediate contingencies for their behavior, whereas those with a more future-oriented time perspective are disproportionately influenced by long-term considerations. Given that smoking carries significant long-term health risks, it has been argued that those with a less future-oriented perspective might be prone to smoking uptake. Conversely, because smoking cessation carries significant health benefits that are to be realized in the future, a future-oriented focus might increase the likelihood of quit attempts among current smokers (Adams, 2009b).

Time perspective can be differentiated from impulsivity on a conceptual level, and in terms of its hypothesized neural versus social underpinnings. On a conceptual level impulsivity reflects a tendency to act quickly with little deliberation over contingencies (short- or long-term), and individual differences therein – particularly the dysfunctional variant of impulsivity – are thought to be closely linked to the operation of subcortical structures in the striatum (Colzato, van den Wildenberg, van der Does, & Hommel, 2010). Time perspective, on the other hand, refers to a tendency to reflect on either short- or long-term contingencies, and to place differential value on anticipated outcomes in each of these temporal categories.

From its earliest beginnings, time perspective has been thought to be more social in origin than biological (Lamm, Schmidt, & Trommsdorff, 1976; LeShan, 1952; Nurmi, 1987). Nonetheless, even the ability to represent future events mentally likely involves the higher cortical structures such as the rostral prefrontal cortex (Benoit, Gilber, & Burgess, 2011), rather than the subcortical regions implicated in impulsivity. Given these distinctions both in conceptualization and in the hypothesized neural substrates, it is reasonable to examine the predictive ability of facets of impulsivity (including sensation-seeking) and time perspective separately.

1.2. Evidence linking time perspective with smoking

Prior studies have indeed found an empirical association between time perspective and various forms of substance use, including smoking (Adams, 2009a; Adams & Nettle, 2009; Apostolidis, Fieulaine, Simonin, & Rolland, 2006; Fieulaine & Martinez, 2010; Henson, Carey, Carey, & Maisto, 2006; Keough, Zimbardo, & Boyd, 1999). However, most existing studies involving smokers have focused on smoking status or maintained cessation among those

engaged in a structured quit attempt (Goto, Takahashi, Nishimura, & Ida, 2009; Yoon et al., 2007), but not on frequency of quit attempts among current smokers more broadly. Moreover, no existing studies have examined the association cross-nationally in large, representative probability samples. The one existing study examining quit attempts found that, when using a financial planning measure of time perspective, those whom had a shorter time horizon were more likely to be smokers, and less likely to quit compared to their more future-oriented counterparts (Adams, 2009a).

Currently very little is known about the relationship between time perspective and quit-related behaviors among current smokers cross-nationally, and even less is known about possible mediating variables for the association. Moreover, many existing studies examining the relationship between personality variables and smoking behaviors typically suffer from methodological and sampling limitations, including cross-sectional designs, small sample sizes of unknown representativeness, and failure to adjust for demographic variables and other factors that might confound the association between time perspective and smoking related behaviors. Although some exceptions exist (e.g., Adams, 2009a), such methodological limitations make it difficult to fully judge the robustness of the effect of time perspective on quitting.

1.3. The current study

The primary aims of this study were to: 1) examine the association between time perspective and quitting activity among current smokers, 2) examine the uniformity of this association across multiple countries, and 3) explore potential mediators for any effects. Based on prior research, it was predicted that both time perspective and sensation-seeking would be associated with quitting activity, but in opposite directions. Specifically, a more future-oriented time perspective would predict increased, while sensation-seeking would predict decreased, quitting activity among smokers over the follow-up interval. It was further anticipated that these associations would be similar in magnitude among the four English-speaking countries surveyed.

Finally, it was anticipated that the effects of time perspective on quit attempts would be mediated through behavioral intention. One of the only prior studies examining social-cognitive mediators of the effects of time perspective on health behavior suggested that time perspective may exert its influence through enhanced intention to perform healthy behaviors (Hall, Fong, & Cheng, 2011). As quitting behavior could be construed as a health related behavior, we expected that this might hold true here as well, and so this variable was our focal mediator. Given that a variety of other social cognitive constructs could mediate the relationship, perhaps more so than sociodemographic variables, we sought to examine multiple mediation through several other variables, including costs/benefits of smoking, and perceived harm of smoking.

In order to examine the hypothesized associations we utilized data from the International Tobacco Control Four Country Survey (ITC-4; Fong et al., 2006; Thompson et al., 2006), a prospective study involving more than 8000 adult smokers in four English language countries. We utilized Waves 1 to 3 of the ITC-4 data for the current analysis.

2. Methods

2.1. Participants and recruitment procedures

Data for the present study came from respondents who participated in the first three waves of the International Tobacco Control Four Country Survey (ITC-4), a longitudinal cohort study of adult smokers (inclusion criteria: aged 18 years and older, self-identified as a current monthly smoker of manufactured or roll-your-own cigarettes,

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