BRIEF REPORT

Just Blowing Smoke? Social Desirability and Reporting of Intentions to Quit Smoking

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ABSTRACT

Introduction: Do cigarette smokers really want to quit smoking or do they simply say they do in order to placate others and avoid criticism? In surveys of smokers, stated quit intentions and reports of quit attempts may be biased by social desirability concerns. This makes it difficult to interpret large-scale state and national surveys of smoking behavior that collect data through telephone and face-to-face interviews, methods that tend to evoke high levels of socially desirable responding.

Methods: The 2007 Health Information National Trends Survey used a dual-frame design to query smokers' quit intentions and past quit attempts in 1 of 2 ways: A self-administered mail survey (low pressure for socially desirable responding; $n = 563$), or an interviewer-administered telephone survey (high pressure for socially desirable responding; $n = 499$). Estimates derived from the 2 formats were compared to test for social desirability effects.

Results: In both survey modes, approximately two thirds of smokers reported seriously considering quitting in the next 6 months (mail: 64.9%; telephone: 68.9%), and approximately half reported making a quit attempt in the past year (mail: 54.9%; telephone: 52.3%). Neither difference approached significance in logistic regressions controlling for demographics ($ps > .24$).

Conclusions: It appears that a large proportion of smokers in the United States aspire to live smoke-free lives and are not simply responding in a socially desirable manner to deflect criticism in an antismoking social climate. Future research should (1) replicate this study with greater statistical power, (2) examine the possible effects of survey context (e.g., health survey vs. smoking pleasure survey), and (3) explore survey mode effects in specific subpopulations.

INTRODUCTION

In the United States, debate exists about the psychological and behavioral factors underlying smoking, with some casting smoking as a rational decision made by people for whom the benefits outweigh the risks (Viscusi, 1992, 2002–2003), and others arguing that smoking is "primarily a manifestation of nicotine addiction" (Jarvis, 2004, p. 277; Sayette, Loewenstein, Griffin, & Black, 2008). Such debates have important implications for public policy, antismoking campaigns, and smoking cessation interventions. For example, most tobacco control efforts are perceived as more ethically justifiable when they are aimed at the subset of smokers who are under the "controlling influence" of nicotine addiction (Fox, 2005, p. ii42). From a practical standpoint, certain widespread cessation techniques, such as pharmacotherapy (U.S. Preventive Services Task Force, 2009), may be more appropriate for smokers whose behavior is more heavily determined by biologic processes (i.e., nicotine dependence).

Central to the question of why people smoke is the extent to which smokers want to quit but are unable to do so. Surveillance conducted by the Centers for Disease Control and Prevention (CDC) between 2003 and 2007 (CDC, 2010) documented the percentage of current smokers in 19 U.S. states reporting that they were "seriously considering stopping smoking within the next 6 months." Percentages ranged from 49.8% (Iowa in 2006) to 66.7% (Alaska in 2003) with a median of 58.4%. The CDC's analysis of the National Health Interview Survey (NHIS) from 2001 to 2010 found that although 52.4% of smokers reported making a quit attempt during the previous year, only 6.2% reported successfully quitting smoking (CDC, 2011). These findings are consistent with Slovic (2001), who described the results of two surveys in which smokers were asked, "If you had it to do over again, would you start smoking?" 85% of adult smokers (aged 23–95) and 80% of young smokers (aged 14–22) indicated that if they could do it over, they would not initiate smoking (p. 122).

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Findings such as these raise the question of whether self-reports of intentions to quit smoking truly reflect a desire to quit smoking (i.e., to escape addiction) or reflect a desire to present oneself in a socially acceptable light. *Social desirability bias* refers to the tendency to over- or underreport particular behaviors in order to avoid being viewed negatively by others (Tourangeau & Yan, 2007). As Viscusi (2002–2003) noted, "Many quit intentions may simply be the learned response that smokers have adopted to deflect criticism in a strong antismoking environment. If critics continually suggest that smoking will kill you and that you should quit, the simplest way to deflect such criticism is to agree and indicate that you intend to quit" (p. 61). This criticism echoes concerns about the use of self-reports to assess smoking behavior. In the past, these concerns have been addressed by comparing self-reports of current smoking behavior to objective indicators of smoking, such as biochemical assessments of plasma, saliva, urine, or expired air. Studies reveal that, except for certain special populations (pregnant women and underage youth), self-reports tend to be accurate (Patrick et al., 1994; Yeager & Krosnick, 2010).

Of course, verifying intentions is more difficult than verifying behavior because intentions are inherently unobservable. However, there are ways to assess self-report bias. For example, one can test whether people are responding truthfully or simply "telling the interviewer what he or she wants to hear" by varying the mode by which self-reports are elicited. Questions asked in face-to-face or telephone interviews are more likely to elicit a socially desirable response than those asked in self-administered surveys (Tourangeau & Smith, 1996). For example, compared with self-administered surveys, respondents in telephone surveys are less likely to report stigmatized behaviors such as illicit drug use (Tourangeau & Smith, 1996), views with potentially negative racial connotations (Chang & Krosnick, 2009, 2010), deviant sexual behavior (Gribble, Miller, Rogers, & Turner, 1999), and alcohol use (Gmel, 2000). It follows that if smokers do in fact report an intention to quit smoking simply to deflect criticism and avoid social disapproval, their reports should also be sensitive to the mode of survey administration.

Present Study

The objective of this study was to examine whether smokers' reports of quit intentions and past quit attempts are biased by social desirability concerns. This is an important question given that population estimates of intentions to quit are often based on telephone interviews of the type that evoke socially desirable responses (CDC, 2010). If the majority of smokers do in fact want to quit, this may help validate concerted interventions and policies aimed at curbing smoking, at least in the subset of smokers who are no longer "willing maintainers" of the behavior (Fox, 2005, p. ii42). Moreover, self-reported quit intentions and quit attempts are commonly used as outcome measures in smoking research, with the caveat that these measures may be biased by social desirability (Prochaska et al., 2011; Reid, Hammond, Boudreau, Fong, & Siahpush, 2010; Thyrian et al., 2008). Although previous research has found a high degree of validity for self-reports of present smoking behavior (Patrick et al., 1994; Yeager & Krosnick, 2010), to the best of our knowledge, no studies have explored the validity of self-reported quit attempts and quit intentions.

METHODS

Data Source

Data were obtained from the National Cancer Institute's 2007 Health Information National Trends Survey (HINTS), a national health communication survey designed to monitor trends in the use of health information and communication technologies, as well as access to and use of cancer-related information. The survey collects data from a nationally representative sample of the U.S. civilian, noninstitutionalized adult population over 18 years of age. Details of survey development, design, and methodology have been published elsewhere and are available online (Cantor et al., 2009; Nelson et al., 2004; Rutten, Moser, Beckjord, Hesse, & Croyle, 2007). The 2007 survey is available at http://hints.cancer.gov/instrument.aspx. Survey items used in this analysis are identified by survey number (e.g., BR-31).

Data Collection

Data were collected from January 7, 2008, through April 27, 2008. In an effort to address declining response rates for random digit dialing (RDD) telephone surveys (Cantor et al., 2009), HINTS 2007 used a dual-frame sampling design: one frame used RDD techniques to identify households for computer-assisted telephone interviews (RDD mode), and one frame used the U.S. Postal Service listing of residential addresses to identify a stratified cluster sample of households to receive a mail survey, which respondents completed on their own (mail mode). For the RDD mode, an initial screener was administered in order to select an eligible household member for an extended interview (screener response rate: 42.4%). One adult from each household was chosen to complete the interview (interview response rate: 57.2%). For the mail mode, all adults in the household were asked to complete a survey (household response rate: 40.0%; within household response rate: 77.4%). The overall response rates for the RDD and mail surveys were 24.2% and 31.0%, respectively. This study is based on data obtained from both the RDD and mail surveys, which allowed us to compare responses presumably provided under pressure to present oneself in a socially desirable light (RDD telephone survey) to responses provided under less pressure to give a socially desirable response (self-administered mail survey).

Measures

Current Smokers

Current smokers were identified based on two questions. First, respondents were asked whether they had smoked at least 100 cigarettes in their lifetime (BR-28). If they answered "yes," they were then asked whether they currently smoked cigarettes "every day," "some days," or "not at all" (BR-29). Respondents who answered "every day" or "some days" were classified as current smokers.

Quit Attempts

Current smokers were asked whether they had tried to quit smoking completely during the past 12 months (BR-35). Response options were "yes" or "no."

Intentions to Quit Smoking

Current smokers were asked whether they were seriously considering quitting smoking within the next 6 months (BR-36). Response options were "yes" or "no."

Sociodemographic Variables

Standard measures were used to assess respondents' sociodemographic characteristics, including age (CC-01), gender (CC-03), highest level of education (HD-07), race or ethnicity (HD-08, HD-09), and annual household income (HD-15).

Analysis

To account for the complex sampling design, adjust for nonresponse bias, and generate statistics representative of the adult U.S. population, jackknife replicate weights were used. A set of 50 weights was applied to the RDD data, and a separate set of 50 weights was applied to the mail data, as recommended for examining mode effects in HINTS 2007 (Moser, Cantor, & Waldron, 2009). Analyses were conducted using SUDAAN version 10.0.1 (RTI International). Binary logistic regressions were used to examine whether reports of current smoking, quit attempts during the past 12 months, and intentions to quit during the next 6 months were different in the self-administered mail survey compared with the RDD telephone survey. Respondents were included in the logistic regressions if data were available for all predictor variables; respondents were included in the regressions on quit attempts and quit intentions if data were also available for both of these outcome measures. Analyses controlled for the effects of sociodemographic variables, as well as whether the respondent reported currently smoking "every day" or "some days."

RESULTS

Current Smoking and Demographics

The percentage of self-reported current smokers was similar in the RDD telephone and mail surveys (20.2% and 22.7%, respectively). This difference did not approach significance in a binary logistic regression controlling for age, gender, education, income, and race (*OR* = 0.90, 95% *CI* = 0.75–1.08, $p = .25$). As shown in Table 1, being classified as a current smoker was more likely for males, non-Hispanic Whites, those lower in income and education, and younger adults. Table 2 shows the demographic characteristics of current smokers by survey mode (mail mode: $n = 563$; RDD mode: $n = 499$). Even after the data were weighted, respondents in the mail mode were more likely to be lower income, younger, and non-Hispanic White (as opposed to Black or African American) compared with those in the RDD mode.

Past Quit Attempts

54.9% of smokers in the mail survey and 52.3% of smokers in the RDD telephone survey indicated that they had attempted to stop smoking completely during the past 12 months. A binary logistic regression controlling for age, gender, education, income, race, and occasional versus every day smoker did not detect a significant effect of survey administration mode on the reporting of quit attempts (*OR* = 0.89, 95% *CI* = 0.58–1.34,

Table 1. Predictors of Current Smoking

Variable	*OR*	95% CI	*p* value
Gender			
Male	1.00		
Female	0.79	0.64–0.97	.03
Age			
18–34	1.00		
35–49	0.99	0.76–1.28	.91
50–64	0.79	0.63–1.02	.07
65–74	0.53	0.39–0.74	<.001
>74	0.11	0.07–0.18	<.001
Education			
Some high school or less	1.00		
High school graduate	0.84	0.59–1.20	.34
Some college	0.83	0.54–1.28	.39
College graduate	0.44	0.29–0.66	<.001
Annual household income			
<$20,000	1.00		
$20,000 to <$35,000	0.65	0.46–0.92	.02
$35,000 to <$50,000	0.48	0.35–0.68	<.001
$50,000 to <$75,000	0.42	0.29–0.60	<.001
$75,000 or more	0.31	0.22–0.46	<.001
Race/ethnicity			
Non-Hispanic White	1.00		
Black/African American	0.81	0.56–1.16	.26
Hispanic	0.51	0.34–0.76	<.01
Other	0.58	0.38–0.90	.02
Survey mode			
Mail	1.00		
Random digit dialing	0.90	0.75–1.08	.25

Note. Odds ratios *(OR)* and *p* values are from a weighted binary logistic regression predicting current smoking. CI = confidence intervals.

Table 2. Demographic Characteristics of Current Smokers by Survey Mode: Unweighted Counts (*n*) and Weighted Percentages (%)

	Mail		Random digit dialing			
Characteristic	*n*	%	*n*	%	*OR*	*p* value
Gender						
Male	222	52.1	204	51.8	1.00	
Female	341	47.9	295	48.2	1.04	.80
Age						
18–34	145	41.5	76	33.8	1.00	
35–49	166	31.2	142	32.9	1.23	.37
50–64	195	21.9	186	24.2	1.29	.22
65–74	47	4.5	75	6.7	1.93	.01
>74	10	0.9	20	2.4	3.49	.02
Education						
Some high school or less	70	18.0	64	16.4	1.00	
High school graduate	202	35.1	178	38.7	1.09	.76
Some college	152	31.8	158	31.6	0.97	.90
College graduate	139	15.2	99	13.4	0.73	.39
Annual household income						
<$20,000	176	32.1	127	25.4	1.00	
$20,000 to <$35,000	94	17.3	100	20.3	1.59	.12
$35,000 to <$50,000	83	15.4	73	10.7	0.99	.98
$50,000 to <$75,000	98	15.3	93	20.6	1.88	.06
$75,000 or more	112	20.0	106	23.0	1.83	.05
Race/ethnicity						
Non-Hispanic White	403	72.1	374	68.3	1.00	
Black/African American	77	10.4	51	15.8	1.76	.04
Hispanic	56	14.6	30	10.1	0.71	.31
Other	27	3.0	44	5.8	2.44	.06
Smoking frequency						
Every day	433	74.8	380	72.6	1.00	
Some days	130	25.2	119	27.4	1.33	.19

Note. Odds ratios *(OR)* and *p* values are from a weighted binary logistic regression predicting survey mode = Random digit dialing.

p = .56). An effect of race emerged, with Black respondents more likely than White respondents to report making a quit attempt in the past year (*OR* = 1.87, 95% *CI* = 0.99–3.55, *p* = .05). No other demographic characteristic predicted self-reported quit attempts.

Quit Intentions

64.9% of mail survey respondents and 68.9% of RDD telephone respondents reported that they were seriously considering quitting smoking within the next 6 months. A binary logistic regression controlling for age, gender, education, income, race, and occasional versus every day smoker found no significant effect of survey mode (*OR* = 1.26, 95% *CI* = 0.85–1.89, *p* = .25). College graduates were marginally more likely than those who did not graduate from high school to report seriously considering quitting smoking (*OR* = 1.92, 95% *CI* = 0.92–4.04, *p* = .08). No other demographic characteristics predicted intentions to quit smoking during the next 6 months. Of note, eight respondents in the RDD mode indicated that they did not know whether they were seriously considering quitting, and one refused to answer, despite providing full data on all predictor variables. Including these respondents (coded as either "yes" or "no") did not alter the results.

DISCUSSION

This study tested for mode effects consistent with social desirability in smokers' reports of quit intentions and past quit attempts in a nationally representative sample of the adult U.S. population. Reports of quit intentions and past quit attempts did not appear to be influenced by concerns about social judgment, as population estimates from the self-administered mail survey and RDD telephone survey did not differ. The cross-mode consistency in reports of quit attempts and quit intentions is consistent with the finding that, outside of special populations of smokers such as pregnant women and underage youth, smokers' reports of their present smoking behavior tend to be accurate, even in face-to-face interviews (Yeager & Krosnick, 2010). It should be noted that social desirability bias in telephone versus self-administered mail surveys is a robust phenomenon that has been replicated for a variety of contexts (Buskirk & Stein, 2008; Chang & Krosnick, 2009, 2010; Elliott et al., 2009; Gmel, 2000; Gribble et al., 1999). For example, a recent study using HINTS 2007 found evidence of social desirability bias related to numeric ability, confidence in the ability to care for oneself, and evaluations of patient–doctor interactions (Wallace, Chisolm, DeVoe, Abdel-Rasoul, & Miser, in press).

The lack of differential reporting of quit intentions between the RDD telephone and mail administration modes is an

important finding, as telephone interviews are commonly used in U.S. government studies aimed at understanding the population of current smokers. For example, the Adult Tobacco Survey uses RDD telephone interviewing to collect data, whereas the Tobacco Use Supplement to the Current Population Survey uses a combination of telephone and face-to-face interviews. This study uncovered no evidence that reports of quit attempts and quit intentions would be different if questions were asked using a method less evocative of social desirability bias (e.g., self-administered mail survey). Moreover, the overall prevalence of quit attempts and quit intentions reported in this study was similar to those derived from other national surveys using interviewer-administered techniques (CDC, 2010, 2011). Together, these findings provide evidence supporting the trustworthiness of smokers' reports of quit intentions.

Limitations

The present results are subject to several potentially important limitations. First, due to sample size limitations, the logistic regressions were sufficiently powered to detect only relatively large effects of survey mode. Specifically, the survey had more than 80% power to detect absolute differences of approximately 9% or greater. Follow-up studies with larger samples would provide greater statistical power to detect main effects of survey mode and to examine potential interactions between survey mode and participant characteristics, such as socioeconomic status (Heerwig & McCabe, 2009) or views of the social acceptability of smoking (Alamar & Glantz, 2006). Although outside the scope of this study, such analyses would provide useful data for those interested in surveying particular subpopulations of smokers.

Second, because the smoking questions were framed in a health context, respondents may have been primed to think about the health effects of smoking rather than its pleasurable aspects. Future research might examine the extent to which reports of quit intentions differ when the survey is cast as "smoking friendly"—for example, when questions concerning quit intentions are preceded by items related to enjoyment of smoking. A potential method for doing this might be to compare reports of quit intentions obtained in previously secret tobacco industry research (Ling & Glantz, 2004) with those obtained in nationally representative health surveys at similar points in time. Alternatively, one might randomize participants within a single survey to receive questions priming either the pleasures or the harms of smoking.

Third, quit intentions and past quit attempts were assessed with single-item, dichotomous measures. Using a different measure, such as a "contemplation ladder" (Biener & Abrams, 1991), or providing graded response options (e.g., strongly desire to quit, somewhat desire to quit, etc.) may have produced a more nuanced assessment of smokers' readiness for change. However, more complex measures, such as a "contemplation ladder," may not be comparable across telephone and mail surveys, as telephone respondents lack visual cues. Moreover, the single-item, dichotomous measures employed in this study are typical of those used in national and state smoking surveys (CDC, 2010, 2011).

Differences between the mail and RDD modes—other than social desirability—may also have influenced our findings. Not only was the response rate lower in the RDD mode but the RDD mode also excluded households without a landline telephone. This is potentially important because adults living in "wireless-only" households (currently more than one third of American households) are more likely to be living under the poverty line and more likely to be current smokers (Blumberg & Luke, 2012). Although the analyses in this study controlled for sociodemographic characteristics and were weighted to reflect the U.S. population, such differences between the two samples may have remained unaccounted for by the multivariate analyses. In particular, there was a remaining trend for respondents in the mail mode to be lower income, younger, and non-Hispanic White (as opposed to Black or African American) compared with those in the RDD mode. The present results, thus, require replication in a controlled experiment in which respondents are randomly assigned to survey mode.

CONCLUSIONS

Much is made of the observation that many smokers who report a desire to quit smoking fail to do so. This speaks to the highly addictive nature of smoking and suggests that people may continue to smoke in spite of—rather than because of—their beliefs, values, and rational self-interest. Our finding of no significant difference in population estimates of quit intentions and past quit attempts in the two survey modes suggests that a large proportion of smokers in the United States aspire to live smoke-free lives and are not simply responding in a socially desirable manner as a way to deflect criticism in an antismoking social climate. Further research is needed to examine the possible effects of survey context, to explore response mode effects in specific subpopulations, and to replicate this study using larger samples and an experimental design.

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DECLARATION OF INTERESTS

None declared.

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