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Perception of Time Since Smoking Cessation: Time in Memory Can Elapse Faster

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Abstract

Self-reports concerning smoking behaviors are subject to different types of response bias that may severely affect the data quality. This study examined the evidence and extent of backward telescoping bias in reports on time since completely quitting smoking among former smokers. The study goals were to determine whether the extent of bias differs, on average, across subpopulations with diverse sociodemographic characteristics, prior smoking habits and duration of smoking abstinence, and across the survey administration mode (phone, in-person, mixed). The sample included 1,611 subjects who responded to the 2002–2003 Tobacco Use Supplement to the Current Population Survey. Multiple regressions for subjects who quit smoking recently, some time ago, and a long time ago were fitted, where the variance was estimated via the Balanced Repeated Replications approach. The model-based estimates were used to compare the extent of response bias across diverse subpopulations of respondents. Analyses revealed a significantly smaller overall extent of response bias for respondents who were younger ($p < 0.01$), female ($p < 0.01$), Non-Hispanic White ($p = 0.02$), employed ($p < 0.01$), who were regular (rather than occasional) smokers in the past ($p < 0.01$), and who quit smoking recently or some time ago as opposed to a long time ago ($p < 0.01$); a significant overall effect of survey mode was also detected ($p < 0.01$). Male respondents who smoked occasionally in the past tended to provide the most disagreeing reports. The discrepancy in reports may be due to backward telescoping bias. Studies which use the national survey smoking cessation measures should be aware of not only possible forward telescoping (that has been addressed in the literature) but also backward telescoping. This will help correctly account for possible impaired perception of time elapsed since smoking cessation in former smokers.

Keywords

Complex sampling; National surveys; Replicate weights; Tobacco and health psychology

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Introduction

Background

Social and behavioral research studies commonly rely on retrospective self-reports when assessing smoking and other health risk behaviors [1–6]. The quality of these self-reports depends on how well a respondent can recall the information and whether the respondent reports truthfully the recalled information. Poor quality of self-reports can jeopardize the research findings. Thus, the researchers and practitioners should be aware of all key factors that can potentially compromise the quality of survey data and be aware of the magnitude of discrepancy so that they can better account for these factors.

One of the biases affecting how well the respondent can recall information is telescoping bias. Telescoping bias refers to misplacement of the actual date of a past event in memory. There are two types of telescoping, forward and backward: in the case of forward telescoping, a more recent date is reported than the actual date of the event, while in the case of backward telescoping, a more remote date of the event is reported than the actual one [7–10]. For example, suppose that a person smoked his or her first cigarette when he or she was 17 years old. If at some point in the future this person claims that the age at which he or she smoked a cigarette for the first time was actually age 19, then the person has forwardly telescoped this event. Instead, if the person claims that the first time he or she smoked a cigarette was at age 15, then the person has backwardly telescoped this event.

Several studies have investigated the presence and potential effect of telescoping with respect to the cigarette smoking initiation age [11–14,15,16] and other substance (tobacco, alcohol, marijuana, and hard drugs) use initiation age [15–19]. The most consistent finding of this literature is that the initiation age of cigarette smoking is subject to forward telescoping. However, one recent study encountered evidence of both types of telescoping in reports of the fairly regular smoking initiation age [12], which corresponded to the response to the survey question: “How old were you when you first started smoking cigarettes fairly regularly?”. The fairly regular smoking initiation age was also discussed in other studies [11], where the overall consistency of responses has been explored in relation to proxy and self-reports over two occasions, one year apart. It was found that self-reports are more consistent than proxy or mixed reports (i.e., reports that include self-report at one time point and proxy-report at another) [11]. Proxy-reports of the fairly regular smoking initiation age were also found to be consistent overall, although less reliable than self-reports, while the mixed reports are not consistent [11].

There have been several factors identified in the literature as potential predictors of telescoping bias and the type of telescoping. Below, the key factors are reviewed.

Elapsed Time—In several non-medical studies it was found that the type of telescoping may depend on whether the event has occurred recently or a long time ago [7]. Thus, whether the events are subject to forward or backward telescoping depends on the elapsed time since they occurred, and the elapsed time is one of the most consistent predictors of the extent of telescoping [7,16].

Respondent Characteristics—The magnitude of telescoping and other types of response bias may also depend on the demographic characteristics of respondents [14,16,19] as well as prior and current smoking behaviors [16]. For example, one recent study investigated the accuracy of reports by children concerning their long-term memories [20]. While it was found that, independent of age, earlier events were subject to forward telescoping and later (more recent) events were subject to backward telescoping, it was also shown that older children were more likely to forwardly telescope and less likely to backwardly telescope the events than were younger children. Thus, it is important to account for age and other respondent characteristics when estimating the extent of the response bias.

The accuracy of responses may also depend on other factors such as time format used in the questionnaire and survey administration mode. Below, the findings concerning the most relevant factors are reviewed.

Time Formats—The impact of absolute and relative time formats used in questionnaires on the accuracy of dating events has been addressed in the literature [7,8,21], where the absolute time format refers to the reported calendar date (day, month and year) of the event and the relative time format refers to the reported elapsed time since the event, i.e., how long ago the event occurred [7]. The absolute time format was shown to result in more accurate reports, and respondents tended to prefer the absolute time format when dating their personal events or recent events and the relative time format when dating news events or remote events [7]. However, the relative time is not the information that a respondent stores in his/her memory; instead respondents store the dates of events regarded as significant, e.g., birthdate of a child [8,21]. Thus, reporting the relative time requires a respondent to first recall the date of the event and then compute the time between the event date and the present date [21].

Survey administration mode—Many studies have shown that the survey administration mode may influence the consistency and precision of self-reports [22], and the influence can be substantial if the reports concern smoking behaviors [23]. Because phone interviews are usually less expensive than in-person interviews [24], phone interviews are widely used in national surveys. However, phone interviews may result in significant underreporting of smoking behaviors when compared to in-person interviews [25,26].

Response units—Rounding errors may occur when survey questions specify the particular units (days, months, years) that a respondent should use [8]. If these units are more precise than the information stored in memory, the respondents may “round” their responses. Two specific properties of rounding are that the proportion of rounded values, as well as the size of the units (used in rounding), are expected to increase over longer spans of time.

Assessing magnitude of response bias: Study goals

The most logical way to measure the extent of response bias for the date of the event of interest is via assessing the time period from the date the event actually occurred to the reported date of the event. However, that is feasible only if the exact time of the event is

known, e.g., the police arrest files [27] or pool records of swimming activities [28] can provide this information. In instances where the true date of the event is unknown, the extent of bias cannot be examined directly. Thus, an alternative approach is used [12–17,19]. If the true event date is unique and fixed in time (but is unknown), the changes in the time interval between the assessment date and the reported date across multiple assessments (where the time interval incorporates an adjustment for the time between the assessments), termed shifts [12], can be used to measure the extent of response bias. In particular, as is illustrated in Figure 1, in the case of forward telescoping, greater time periods from the assessment to the reported date correspond to a smaller extent of telescoping, while in the case of backward telescoping, greater periods correspond to a larger extent of telescoping. In each case, the (absolute) value of the shift can be used to measure the extent of the response bias.

In our study the event of interest was smoking cessation, defined as "completely quitting smoking". We used the time since completely quitting smoking reported on two occasions to compute the shift as the elapsed time since smoking cessation reported at the 2nd assessment (adjusted for the time between the assessments – this adjusted reported elapsed time (ARET) is illustrated in Figure 1) minus the elapsed time since smoking cessation reported at the 1st assessment (this reported elapsed time (RET) is also illustrated in Figure 1). The overall consistency of reported time since completely quitting smoking have been previously addressed [26], where the summary statistics for the time reported in 2002 and 2003 have been presented. In this study we limited our consideration to respondents who indicated greater time since smoking cessation in 2003 than they did in 2002 (after adjusting for the time between assessments). In addition, respondents who reported the time since smoking cessation consistently were included in the study. We used the average shift to measure the extent of response bias in the population.

The goals of our research were as follows. **Goal 1** was to identify whether the response bias in reported time since completely quitting smoking differs between the survey modes (in-person, phone, mixed) and across diverse respondent characteristics such as age, gender, race/ethnicity, highest level of education, employment status, prior smoking status (regular smoker, occasional smoker) and duration of smoking abstinence (i.e., subjects who quit smoking recently, some time ago and a long time ago, as is defined in the Materials and Methods section). Since the effect of these factors may depend on prior smoking status, **Goal 2** was to examine whether the extent of the response bias differs across specific subpopulations of respondents who formerly smoked regularly versus occasionally. **Goal 3** was to confirm that those who reported completely quitting smoking more remotely tended to report using larger units.

Materials and Methods

The analyses utilized the 2002–2003 Tobacco Use Supplement to the Current Population Survey (TUS-CPS), sponsored by the National Cancer Institute, U.S. National Institutes of Health, U.S. Department of Health and Human Services, and administered as a supplement to the Current Population Survey sponsored by the U.S. Census Bureau and the U.S. Bureau of Labor Statistics [29]. The TUS-CPS is a national household survey and is a key source of

data on smoking behaviors and attitudes towards tobacco-related norms and policies for smoking prevention.

The surveys were administered to the same respondents via in-person or phone interviews; mixed survey modes were permitted across the two survey waves, i.e., some respondents had an in-person interview in 2002 and a phone interview in 2003 or vice versa.

The time since completely quitting smoking (reported in days, months and years) was converted to days. Then the difference was constructed as the 2003 response minus the sum of the 2002 response and 365 (days), to adjust for the one-year period between the assessments. Finally, the data were converted into years; rounding to one decimal place was used to adjust for a possible error when converting the data [26].

There were 2,690 subjects who were identified as former smokers, i.e., subjects who indicated that they did not smoke between the surveys and for whom the prior smoking information (regular smoker or occasional smoker) was available. Among those subjects, 612 (22.8%) respondents provided consistent reports, 999 (37.1%) respondents indicated a greater time since smoking cessation at the 2nd assessment than they did at the 1st assessment (after adjusting for the time between assessments) and 1,079 (40.1%) respondents reported a smaller time since smoking cessation at the 2nd assessment than they did at the 1st assessment (after adjusting for the time between assessments). The latter subsample was not investigated in the study: our sample consisted of 1,611 respondents. Table 1 presents the sample characteristics.

Based on the 1st assessment data, we identified recent, mid-term and long-term quitters as follows. Subjects who had quit 5 years ago or less (at the time of the first assessment) were said to be recent quitters, subjects who had quit more than 5 years ago but less than 16 years ago were said to be mid-term quitters, and subjects who quit at least 16 years ago were said to be long-term quitters. Note that younger respondents could not be the mid- or long-term quitters; therefore, age groups were defined differently for recent quitters (15–35, 36–45, 46–55, and 56–80 years old), mid-term quitters (22–45, 46–55, 56–65, and 66–80 years old) and long-term quitters (34–50, 51–60, 61–70, and 71–80 years old).

The overall significance level was fixed at 5% with respect to each goal. Analyses were done using SAS® 9.2 software [30,31]. All analyses incorporated adjustment for the complex sample design using the replicate weights [32]. The Bonferroni approach was used to adjust for multiplicity when multiple comparisons were performed.

To address **Goal 1**, we fitted separate simple survey regression models that contained each key factor (one at a time, e.g., just gender, just race/ethnicity, etc.) in addition to the intercept and then performed comparisons of interest. To assess **Goal 2**, we identified the relationships between the mean shift and a set of the key characteristics, mentioned above, and their joint effects, and then used the model-based estimates in hypothesis testing. Since the respondent's age and time since completely quitting smoking were highly positively correlated, separate models for subjects who quit smoking recently, some time ago and a long time ago were built while controlling for age. The models contained all three-way interactions except for the ones involving race/ethnicity and prior smoking status. Due to

insufficient sample sizes, only the main effect of race/ethnicity and two-way interaction terms with prior smoking status were included. For significant two-way interactions, model-based specific comparisons between respondents who were regular and occasional smokers (in their past) were examined (for each level of age, gender, highest level of education, employment status, and survey mode).

Results

Goal 1 (Extent of Response Bias between the Survey Modes and across Diverse Key Characteristics)

Individual regressions (where all models except for the one corresponding to the highest level of education were significant, $p \leq 0.02$) indicated that the mean shifts were significantly different (overall) among survey modes ($p = 0.01$) and across all respondent factors except for the highest level of education ($p = 0.22$), i.e., gender ($p < 0.01$), race/ethnicity ($p = 0.02$), and employment status ($p < 0.01$); prior smoking status ($p < 0.01$) and duration of smoking abstinence ($p < 0.01$).

Figures 2 and 3 display the mean shifts with the corresponding 95% individual confidence intervals for (qualitative) characteristics. As is depicted in Figure 3, the mixed mode resulted in the smallest mean shift (2.49 years) when compared to phone (3.07 years) and in-person (3.02 years) interviews. While there was a significant difference between the phone and mixed interviews ($p < 0.01$), there was no significant difference between the phone and in-person interviews, and in-person and mixed interviews. The pair-wise comparisons between the recent, mid-term and long-term quitters indicated that recent quitters significantly differed from the long-term quitters ($p < 0.01$), and mid-term quitters significantly differed from the long-term quitters ($p < 0.01$); there was no significant difference between recent and mid-term quitters in terms of the mean shift.

Age was seen to be positively linearly associated with the shift ($r = 0.29$, CI = 0.23:0.34), and the association was the strongest for long-term quitters ($r = 0.38$, CI = 0.33:0.44) in comparison with recent ($r = 0.26$, CI = 0.16:0.36) and mid-term ($r = 0.24$, CI = 0.16:0.32) quitters. It was estimated that a one year increase in respondent age corresponds to an overall 0.10 unit increase in the mean shift ($p < 0.01$). In particular, a one year increase in respondent age corresponds to 0.10 unit increases in the mean shift for recent quitters, 0.09 for mid-term quitters and 0.19 for long-term quitters (all p's < 0.01).

Among the effects considered, respondent age was the most important predictor of the mean shift, followed by employment status and then duration of smoking abstinence and prior smoking status; the respective R^2 coefficients for intercept-inclusive models are 0.082, 0.032, 0.004, and 0.004.

Goal 2 (Model-based specific comparisons for recent, mid-term and long-term quitters)

All multiple regression models were significant with adequate data fit: $R^2 = 0.70$ for the model corresponding to the recent quitters, $R^2 = 0.42$ for the model corresponding to the mid-term quitters and $R^2 = 0.58$ for the model corresponding to the long-term quitters (all p's < 0.01). While the models contained a number of significant interactions, here only the

interactions of primary interest are discussed. Table 2 presents the model-based results for significant two-way interactions of interest. The other two-way interactions of interest were not significant, i.e., the interactions between the prior smoking status and education level (all p's ≥ 0.08), the interaction between the prior smoking status and survey mode for mid-term quitters ($p = 0.49$), and the interaction between the prior smoking status and employment status for long-term quitters ($p = 0.16$).

Among common significant joint effects of interest, the largest predicted mean shift corresponded to the older (71–80 years old) occasional smokers who quit smoking a long time ago (the mean shift is about 12 years), male occasional smokers who quit smoking a long time ago (the mean shift is about 8 years), and occasional smokers who were surveyed over the phone both times (the mean shift is about 7 years). Among recent quitters, there were significant differences (in terms of the mean shift) between subjects who were regular and occasional smokers and who are mid-age (36–55 years old), both employed – at work or not (employed but are absent from work, are not employed, or are not in the labor force), and were interviewed via any survey mode. Among mid-term quitters, there were significant differences between subjects who smoked regularly and occasionally with respect to younger and mid-age (22–45 years old) respondents, and the ones who do not currently work. Among long-term quitters, there were significant differences between subjects who were regular and occasional smokers and who are 34–60 or 71–80 years old, both, male and female, and had the same type of the interview (phone interviews both times or in-person interviews both times).

Whether the regular or occasional smokers corresponded to the larger mean shift depended on the particular respondent characteristic and the duration of smoking abstinence group. The common pattern is that the higher mean shifts corresponded to male respondents who smoked occasionally when compared to males who smoked regularly or females (this is observed for recent, mid-term and long-term quitters).

Goal 3 (Precision of response units)

Table 3 presents the units used by the respondents when reporting their time since completely quitting smoking. Only a few recent quitters used days, weeks or months as the units, while mid- and long-term quitters used only years as the units, which is consistent with our expectations and prior research findings [8].

Discussion

In this study we explored the extent of the discrepancy and factors associated with reporting a greater time since smoking cessation at a future assessment than such a time reported earlier. Our findings indicated that there are several factors that affect (individually as well as jointly) the extent of the discrepancy. These factors include respondent sociodemographic characteristics (age, gender, race/ ethnicity, employment status), duration of smoking abstinence, prior smoking habits (smoked regularly or occasionally), and survey administration mode. The long-term quitters (who are also the older subjects) and respondents who smoked occasionally in the past (as opposed to those who smoked regularly) reported the elapsed time with greater discrepancies, overall. Significant joint

effects between the survey mode and prior smoking habits on the (mean) discrepancy in reports of recent or long-term quitters were detected. For recent or long-term quitters the largest discrepancy was observed for occasional smokers who had the phones both times.

Our results indicate that backward telescoping bias might be prevalent in reports of smoking cessation, especially for older respondents, respondents who quit smoking a long time ago, or for those who smoked occasionally in the past. Accuracy of self-reported smoking cessation depends on whether a respondent can recall the information correctly, and if so then whether the respondent reports truthfully the recalled information. Due to the lack of the exact dates of smoking cessation, it is impossible to differentiate among these different response biases, i.e., telescoping and social desirability [1,22], that can affect the responses at each assessment. However, if the responses were primarily due to social desirability bias then we would not expect to see such huge discrepancies in reporting for the identified subpopulations. In particular, the average discrepancy in reports was about 12 years for 71–80 year old respondents who quit smoking a long time ago and were occasional smokers in the past. The reports of these respondents are not expected to be highly affected by the social desirability bias, and the magnitude of the discrepancy suggests that the respondents have difficulties recalling the date of their smoking cessation, and thus, backwardly telescope the event.

We also observed that the dates of the remote events (completely quitting smoking) were reported using less exact units than the ones of more recent events, i.e., mid-term and long-term quitters reported the time using years only. This can be due to the “decreasing precision in memory” [8].

Our findings reinforce the importance of designing meaningful surveys, especially when the surveys are targeted at assessing health risks. Efforts should be made to facilitate accurate recalling and reporting prior behaviors, e.g., carefully designed questionnaires could be highly beneficial in terms of precision with which the smoking cessation is dated [23]. In addition, when using the TUS-CPS or other national survey estimates the researchers should be aware of possible significant response bias and consequent inaccuracy of reports, as well as the different extent of the bias across diverse subpopulations.

The primary limitations of our study are as follows. First, we used self-reports to identify subjects who completely quit smoking and who did not smoke between the assessments; the latter was important to assure that the reports (given at two occasions) concern the same event – completely quitting smoking for each subject. However, there is a concern that some respondents may have disregarded their (occasional) smoking between the assessments. Thus, these respondents may have been included incorrectly in the study. The second limitation is that we explored only one type of discrepancy, i.e., the date of completely quitting smoking was reported as more recent at the earlier assessment than it was at the latter assessment, and the relationships are expected to be different when the other type of discrepancy is considered.

Future research should be conducted to investigate the extent of the response bias using larger and more recent national data. The associated difficulty is that national surveys rarely

implement a suitable design with multiple replicates. Thus, usual national surveys do not allow for any comparisons between reports in different assessments unless there are additional sources of information available, e.g., self-reported information can be compared to the hospital records, police reports, etc.

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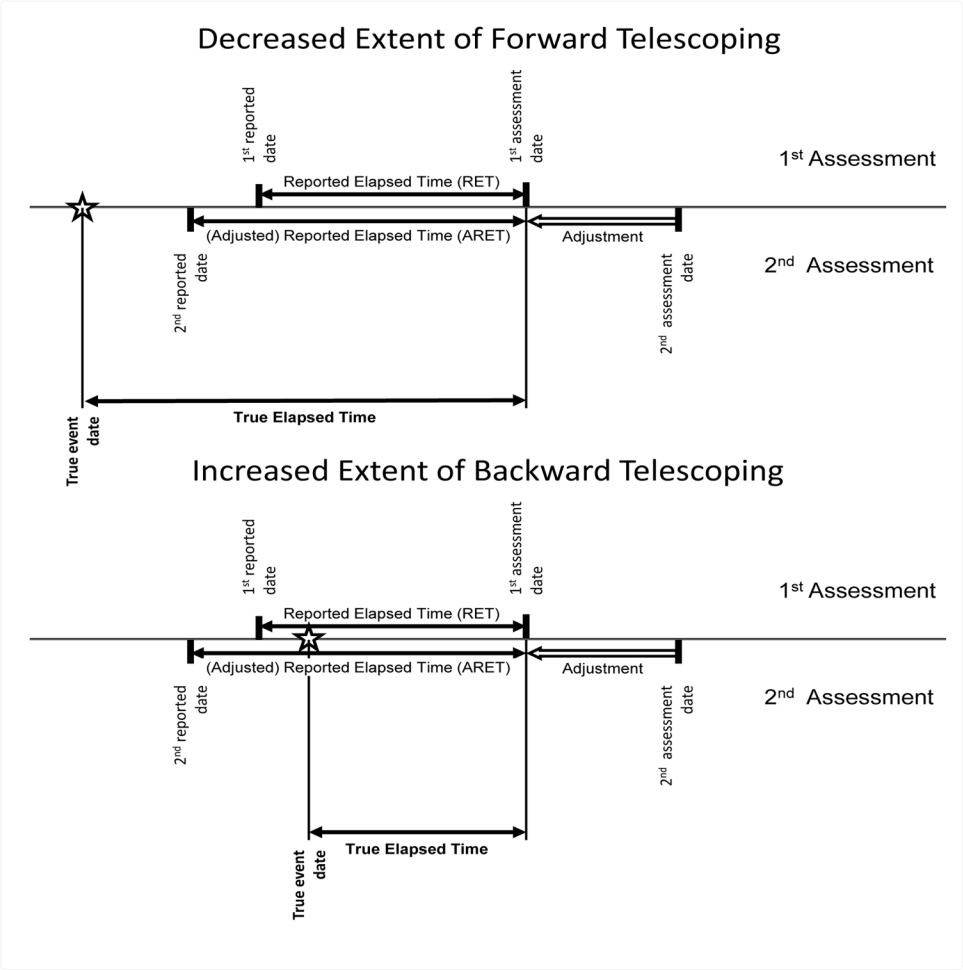

Figure 1.

Response Bias at each Assessment; Decreased (from the 1st to the 2nd Assessment) Extent of Forward Telescoping and Increased Extent of Backward Telescoping.

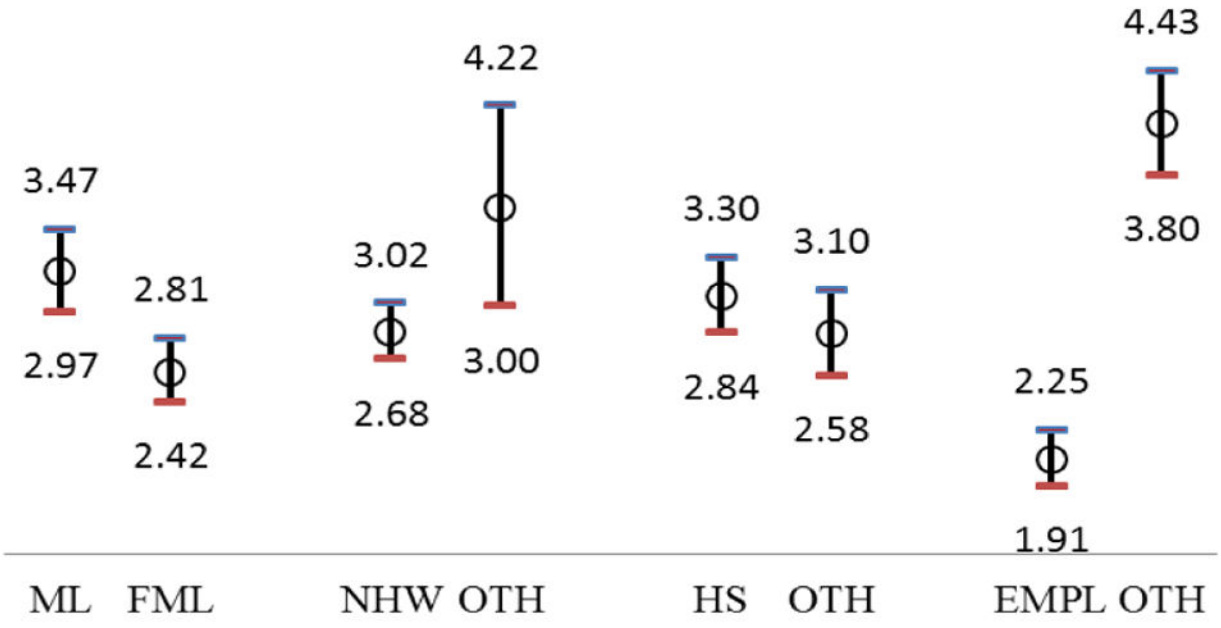

Figure 2.

Individual 95% Confidence Intervals for the Mean Shift across the Gender, Race/ethnicity, Highest Level of Education and Employment Status categories (ML and FML Stand for "Male" and "Female", respectively; NHW Stands for "Non-Hispanic White", HS Stands for "High School Graduate or Equivalent or Less", EMPL Stands for "Employed - at Work", and OTH Stands for "Other").

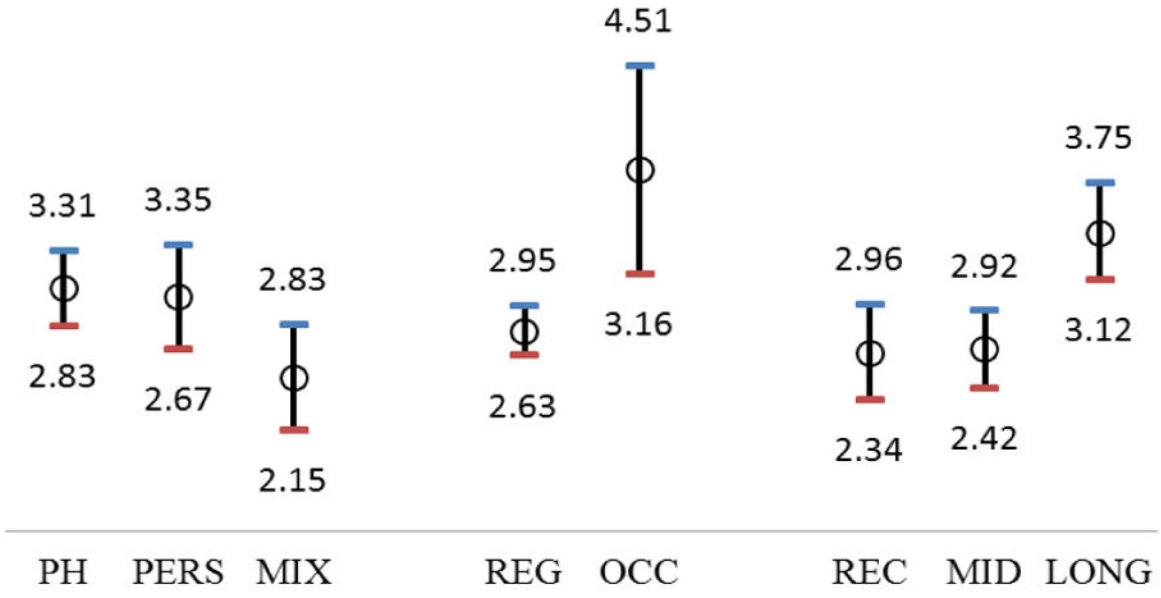

Figure 3.

Individual 95% Confidence Intervals for the Mean Shift across the Duration of Smoking Abstinence Groups, Prior Smoking Status and Survey mode (PH, PERS and MIX Stand for "Phone Both Times", "In-Person Both Times" and "Mixed", respectively; REC, MID and LONG Stand for "Recent Quitters", REG and OCC Stand for "Regular" and "Occasional" Smokers, respectively).

Table 1

Description of the Sample: Sample Count and Percentage.

Characteristic	Recent Quitters N = 402	Mid-term Quitters N = 558	Long-term Quitters N = 651	Overall N = 1,611
Time Since Completely Quitting Smoking Difference (Shift)				
Mean (SE)	2.65 (0.15)	2.68 (0.12)	3.43 (0.16)	2.95 (0.08)
Prior Smoking Status				
Regular smoker	339 (84.3%)	479 (85.8%)	570 (87.6%)	1388 (85.2%)
Occasional smoker	63 (15.7%)	79 (14.2%)	81 (12.4%)	223 (14.8%)
Age				
Mean (SE)	43.62 (0.46)	52.81 (0.31)	62.12 (0.25)	53.54 (0.25)
Gender				
Male	193 (48.5%)	263 (47.1%)	325 (49.9%)	781 (54.8%)
Female	209 (51.5%)	295 (52.9%)	326 (50.1%)	830 (45.2%)
Race/Ethnicity				
Non-Hispanic White	350 (87.1%)	505 (90.5%)	614 (94.3%)	1469 (87.2%)
Other	52 (12.9%)	53 (9.5%)	37 (5.7%)	142 (12.8%)
Highest Level of Education				
High school graduate or equivalent or less	208 (51.7%)	267 (47.8%)	293 (45.0%)	768 (45.9%)
Other (some college or higher)	194 (48.3%)	291 (52.2%)	358 (55.0%)	843 (54.1%)
Employment Status				
Employed – at work	239 (59.5%)	326 (58.4%)	324 (49.8%)	889 (57.4%)
Other (employed -- absent, not employed or not in the labor force)	163 (40.5%)	232 (41.6%)	327 (50.2%)	722 (42.6%)
Metropolitan Status				
Metropolitan	283 (70.4%)	418 (74.9%)	471 (72.3%)	1172 (81.3%)
Non-metropolitan	119 (29.6%)	140 (25.1%)	180 (27.6%)	439 (18.7%)
Region				
Northeast	93 (23.1%)	138 (24.7%)	167 (25.7%)	398 (22.3%)
Midwest	116 (28.9%)	134 (24.0%)	183 (28.1%)	433 (23.2%)
South	99 (24.6%)	163 (29.2%)	154 (23.7%)	416 (32.6%)
West	94 (23.4%)	123 (22.0%)	147 (22.6%)	364 (21.9%)
Survey Mode				
Phone both times	225 (56.0%)	335 (60.0%)	402 (61.8%)	962 (58.6%)
In-person both times	101 (25.1%)	118 (21.1%)	139 (21.4%)	358 (21.8%)
Mixed mode	76 (18.9%)	105 (18.8%)	110 (16.9%)	291 (19.5%)

Table 2

Least Squares Mean Estimates (with Standard Errors) and Comparisons between the Mean Shifts for Significant Interactions.

Factor (p-Value for the Interaction)	Regular Smokers	Occasional Smokers	p-Value* for the Comparison
RECENT QUITTERS			
Overall	2.54 (0.09)	3.11 (0.27)	**0.04**
Age (p<0.01)			
15–35 years old	0.95 (0.10)	0.95 (0.14)	0.98
36–45 years old	1.67 (0.21)	5.91 (0.77)	**<0.01**
46–55 years old	2.86 (0.16)	1.22 (0.27)	**<0.01**
56–80 years old	5.19 (0.29)	4.79 (0.29)	0.36
Gender (p<0.01)			
Male	2.72 (0.13)	3.71 (0.38)	**0.02**
Female	2.33 (0.17)	1.98 (0.22)	0.21
Employment Status (p<0.01)			
Employed - at work	1.75 (0.10)	3.73 (0.38)	**<0.01**
Other	3.84 (0.16)	1.98 (0.20)	**<0.01**
Survey Mode (p<0.01)			
Phone both times	2.21 (0.14)	4.92 (0.45)	**<0.01**
In-person both times	3.16 (0.20)	1.01 (0.25)	**<0.01**
Mixed mode	2.61 (0.16)	0.63 (0.18)	**<0.01**
MID-TERM QUITTERS			
Overall	2.64 (0.10)	2.90 (0.20)	0.25
Age (p = 0.01)			
22–45 years old	1.44 (0.09)	2.32 (0.23)	**<0.01**
46–55 years old	2.34 (0.16)	3.80 (0.69)	0.04
56–65 years old	2.65 (0.16)	2.66 (0.21)	0.96
66–80 years old	4.76 (0.45)	5.01 (0.92)	0.82
Gender (p = 0.03)			
Male	2.74 (0.17)	3.08 (0.32)	0.35
Female	2.52 (0.12)	2.68 (0.26)	0.60
Employment Status (p<0.01)			
Employed - at work	2.35 (0.11)	2.39 (0.22)	0.88
Other	3.03 (0.21)	4.46 (0.44)	**<0.01**
LONG-TERM QUITTERS			
Overall	3.11 (0.10)	6.09 (0.44)	**<0.01**
Age (p<0.01)			
34–50 years old	0.99 (0.09)	2.68 (0.24)	**<0.01**
51–60 years old	1.44 (0.08)	2.81 (0.38)	**<0.01**

Factor (p-Value for the Interaction)	Regular Smokers	Occasional Smokers	p-Value* for the Comparison
61–70 years old	2.84 (0.20)	2.82 (0.53)	0.97
71–80 years old	6.35 (0.30)	12.22 (1.20)	**<0.01**
Gender (p<0.01)			
Male	3.38 (0.14)	8.04 (0.76)	**<0.01**
Female	2.78 (0.14)	4.18 (0.38)	**<0.01**
Survey Mode (p<0.01)			
Phone both times	3.25 (0.13)	7.47 (0.63)	**<0.01**
In-person both times	2.69 (0.16)	3.83 (0.36)	**<0.01**
Mixed mode	3.09 (0.29)	2.99 (0.81)	0.91

* Note: unadjusted p-values are reported, significant results (after adjustments) are bold

Table 3

Units Used to Report the Time since Completely Quitting Smoking in the Sample: Frequency and the Column Percentage.

	Recent Quitters	Mid-term Quitters	Long-term Quitters	Overall
Days	7 (1.74%)	0 (0.00%)	0 (0.00%)	7 (0.43%)
Weeks	9 (2.24%)	0 (0.00%)	0 (0.00%)	9 (0.56%)
Months	87 (21.64%)	0 (0.00%)	0 (0.00%)	87 (5.40%)
Years	299 (74.38%)	558 (100.00%)	651 (100.00%)	1508 (93.61%)