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## Recruiting unmotivated smokers into a smoking induction trial

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### Abstract

Little is known about effective methods to recruit unmotivated smokers into cessation induction trials, the reasons unmotivated smokers agree to participate, and the impact of those reasons on study outcomes. A mixed-method approach was used to examine recruitment data from a randomized controlled cessation induction trial that enrolled 255 adult smokers with low motivation to quit. Over 15 months, 33% of smokers who inquired about the study were enrolled. Common recruitment methods included word-of-mouth, print advertisements and clinic referrals. Frequently mentioned reasons for participating included to: gain financial incentives (44.7%), learn about research or help others quit (43%), learn about smoking and risks (40%) and help with future quits (i.e. Quit Assistance, 23.9%). Separate regression models predicting study outcomes at 26 weeks indicated that smokers who said they participated for Quit Assistance reported higher motivation to quit (B 1.26) and were more likely to have made a quit attempt (OR 2.03) compared to those not mentioning this reason, when baseline characteristics

were controlled. Understanding reasons for unmotivated smokers' interest in treatment can help practitioners and researchers design effective strategies to engage this population.

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### Introduction

Although research has led to the development of interventions to help smokers quit [1, 2], 42.1 million adults in the United States continue to smoke [3]. While 69% of smokers are interested in quitting, only 20% are ready to make a quit attempt at any given time [3]. Unfortunately, previous research has largely focused on the minority of smokers who are ready to make a quit attempt, while paying relatively little attention to 80% of smokers who are either unmotivated or not quite ready to quit [4]. Studies that examine methods to encourage smokers not seeking assistance to quit are referred to as smoking induction studies [5]. These studies face the difficult challenge of recruiting smokers not motivated or ready to quit into studies that aim to have them quit. Little is known about effective methods to recruit these unmotivated smokers and their reasons for agreeing to participate.

General methods for study recruitment include proactive efforts, in which the potential participant is contacted directly, typically by a member of the study team or through direct or electronic mail, phone calls or text messages. Alternatively, recruitment efforts can be reactive, which requires potential participants to take action to contact study personnel. These methods include flyers, billboards and media advertisements (e.g. print, internet, radio, television). Meta analyses of the smoking cessation trial recruitment literature suggest that proactive recruitment methods (e.g. telephone calls) are more effective in recruiting smokers than reactive recruitment approaches [6–8]. Further, research suggests tailored recruitment approaches, including location-specific text messages, yield more participants than generic recruitment approaches [6]. However, recent studies recruiting unmotivated smokers using tailored, proactive recruitment methods (e.g. mass targeted electronic mail to potential participants) have yielded low recruitment rates—ranging from 4.5% to 7.7% [5, 9]. Other studies using social media (e.g. Facebook and Craigslist) to reactively recruit smokers who are not ready to quit yielded similarly low recruitment rates ranging from 7.2% to 10% [10, 11]. It is unclear whether alternative recruitment methods might be more successful.

In addition to the lack of knowledge about effective methods for recruiting unmotivated smokers, little is known about the reasons smokers choose to enroll in induction studies. Examining participants' stated reasons for enrolling is one way of ascertaining whether smokers' motivation for participating has any influence on who participates in cessation induction studies and if smokers' motivations have an impact on study outcomes. Knowing why smokers agree to participate, such as to receive study incentives or to gain knowledge on the effects of smoking, could also inform efforts to increase recruitment and study engagement in unmotivated smokers.

The purpose of this study was to examine data from KC Quest, a randomized controlled cessation induction trial that enrolled 255 unmotivated adult smokers from a large urban community, to (i) describe the yield from and cost of various methods

of recruitment, (ii) explore enrollees' reasons for participating and (iii) examine enrollees' reasons for participating in relation to baseline characteristics, extent of study participation and study outcomes.

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## Materials and methods

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### General procedures

Data were collected as part of a larger trial evaluating the effects of different counseling interventions to induce quit attempts among smokers who were unmotivated to quit [12, 13]. Study participants were recruited from one metropolitan area. Those determined initially eligible after being screened by telephone were scheduled for an in-person laboratory visit for final eligibility screening, enrollment and baseline assessment. Participants were classified as unmotivated to quit and eligible to participate if they reported (i) having no plans to quit smoking in the next 7 days and (ii) not currently motivated to quit smoking as defined as a score of 6 or less on a 0–10 point scale of motivation to quit smoking. Study participants were randomly assigned on a 2:2:1 ratio to one of three counseling arms: Motivational Interviewing (MI), Health Education (HE) and Brief Advice (BA). Each counseling arm differed in style and approach. In addition to the baseline assessment and counseling visit(s), all participants completed follow up assessments at 12 and 26 weeks. Study participants were compensated for each study component completed, up to \$120 for BA (\$10 at baseline counseling session, \$30 at baseline and 12-week assessment visits, and \$50 at 26-week assessment visit) and \$150 for MI and HE (\$10 at each counseling session, \$30 at baseline and 12-week assessments, and \$50 at 26-week assessment visit). The study advertisements indicated that participants would be 'reimbursed for their time and travel' and the maximum compensation amount was described during the telephone screening call. The study was approved and monitored by a University institutional review board. Informed consent was obtained from all individual participants included in the study.

## Recruitment strategies

Several targeted reactive methods were designed to recruit smokers who were either not motivated or not ready to quit. Potential participants were invited to call a study number to receive specific details about the study and answer several questions to determine preliminary eligibility. At the study's onset, members of the research team presented study information to health care providers (i.e. physicians and nurses) and enlisted the support of three local health care practices to recruit patients to the study. Providers were asked to display flyers in exam rooms and waiting areas and distribute recruitment cards to interested participants. To strategically target unmotivated smokers, flyers and cards read: 'Are you a smoker who does not want to quit or is not quite ready to quit? Call today to be part of a research study'. The recruitment materials included a brief description of the study including eligibility criteria and study contact information. Recruitment fliers and cards were also circulated and displayed at three universities and at a community health fair.

Three advertisements were purchased and placed in local newspapers (two that were distributed at no cost and one that required a paid subscription). All advertisements emphasized that the study was recruiting smokers 'not quite ready to quit' to help researchers 'learn how to best talk to smokers about their health'. During the same time period, one additional print advertisement was placed in a local newspaper seeking all adult smokers with the additional purpose to recruit smokers to a different study; some smokers eligible for the current study responded to that advertisement.

Advertisements were also placed on social media and other websites, including Facebook and Craigslist, and displayed on a local billboard. Additionally, participants informally shared study information, including project staff business cards and the study contact number, with friends, family members, and neighbors, co-workers, and transit commuters. Study staff did not request or encourage participants to disseminate information to other smokers.

## Measures

Assessment questions relevant to the present study are described below.

### *Demographics and smoking characteristics*

At baseline, participants provided socio-demographic information including gender, age, ethnicity, level of education and household income. Participants also provided data on their smoking characteristics including, age at smoking initiation [14] and the average number of cigarettes smoked per day in the past 7 days using a single item [15]. Additionally, participants indicated the number of times (if any) they made a serious attempt to quit smoking ('not smoking at all for at least 24h') in the past 3 months (at baseline) and since the last study visit at all assessment visits. Nicotine dependence was assessed using the 'time to first cigarette' question from the Fagerstrom Test for Nicotine Dependence [16]. This single item has been used in previous studies to assess ability to quit and nicotine dependence [17].

### *Recruitment methods and cost*

To assess the recruitment source for each participant, interviewers asked during the telephone screen 'How did you hear about the study?' Interviewers classified the responses into categories of recruitment methods from a continually updated list of recruitment efforts implemented throughout the study (e.g. 'newspaper ad') or frequently mentioned ways of hearing about the study (e.g. 'neighbor'). Direct costs associated with each recruitment method, such as newspaper advertisement fees, were recorded by project staff. Indirect costs, such as staff time and equipment, were not included. Cost per enrollee was calculated by dividing the cost of the recruitment method by the number of participants who reported hearing about the study by that method.

### *Motivation to participate*

To understand why smokers were interested in participating in the study, the baseline survey included

the open-ended question: 'We are interested in the reasons that smokers who are not yet ready to quit participate in this study. What are your reasons for participating in KC QUEST?' Smokers were provided with three blank lines in the computerized assessment program and asked to provide one response per line.

#### *Motivation and confidence to quit smoking*

Motivation and confidence to quit smoking was measured at each assessment point using two single item scales. Motivation to quit smoking was assessed on a 0–10 point scale of 'How motivated are you to quit smoking?', with 0 being not at all motivated and 10 being extremely motivated to quit smoking. A similar 0–10 response scale was used to assess 'How confident are you that you could quit smoking if you wanted to?' These items have been successfully used to assess motivation and confidence for smoking behavior change in prior studies [14, 18].

#### *Quit attempts and cessation*

Quit attempts were assessed by asking participants if they had made a 'serious attempt that lasted at least 24h' since the last assessment visit [15, 19, 20]. Data were aggregated into a single dichotomous variable that indicated whether any quit attempt had been made since baseline. Smoking status was assessed based on self-reported 7-day point prevalence abstinence using the question 'Have you smoked at least part of a cigarette in the past 7 days, even a puff?' [15, 21]. At 26 weeks, reports of cessation were biochemically verified using saliva cotinine [22]. Those with missing values at Week 26 were coded as smokers.

#### *Study process measures*

Participants' level of study engagement was assessed by tallying the number of assessments completed and that variable was dichotomized to indicate those who completed all assessments versus those who did not. Counseling engagement was dichotomized to indicate those who complete all four counseling sessions versus those who

completed three or fewer. Counseling engagement was not assessed for participants in the BA arm since only one scheduled session occurred at baseline.

#### **Data analysis**

Qualitative methods were used to categorize reasons smokers participated in the study. Through discussion and consensus, the investigative team used content analysis strategies [23, 24] to develop eight categories, construct definitions and classify the reasons into the categories (Table I). Another investigator independently classified a random sample of participants' reasons using the same categories, and the inter-rater reliability was assessed. The overall agreement between coders was 87% (80/92), with Cohen's kappa significantly higher than expected by chance ( $k = 0.81$ ) representing very good agreement [25].

The four reasons cited most frequently are examined in the quantitative analyses and marked in bold on Table I. We examined the independent effect of each reason with linear and logistic regression models in which reasons for participating were the independent variables and baseline characteristics, study engagement variables, and study outcomes were the dependent variables in 16 separate models. Reason categories were dummy coded. Since reasons for participating might be correlated with established constructs that predict outcome, such as level of smoking and motivation and confidence to quit, we also repeated the models for the three study outcomes controlling for the baseline variables of motivation, confidence and cigarettes smoked, as well as treatment assignment, which was not of interest in this study. Further, to rule out the possibility that the observed associations were due to simply reporting more reasons (rather than a specific reason), we calculated the number of reasons given by each participant and explored the association between the number of reasons (as a continuous variable) and all the other variables of interest (demographic characteristics, study participation variables and study outcomes). Data analyses were completed in SPSS 21.0 and SAS 9.3.

**Table I.** Categories for reasons for participating, with definitions and examples, and proportion (and number) of enrolled participants ( $N=255$ ) who mentioned one or more reasons in each category

Category	Definition	Illustrative quotes	Proportion ( $n$ ) <sup>a</sup>
<b>Financial incentives</b>	<b>Monetary compensation offered to research participants.</b>	‘I can use the extra money’ ‘I can earn a little cash’ ‘I am going to be paid’	<b>44.7% (114)</b>
<b>Research interest or altruism</b>	<b>A curiosity or interest in the study and the general research process. Participants enjoy being a part of the research process. An interest to learn about the study and its findings. Desire to help out, assist with research, and assist other smokers who may want to quit.</b>	‘Thought it would be interesting’ ‘Curious about the research process and what I will learn from this’ ‘I like participating in studies and market research’ ‘To help others learn how to assist smokers who are not ready to quit’	<b>43.1% (110)</b>
<b>Education and insight</b>	<b>Information to understand specific aspects of smoking including why I smoke, the risks of smoking, the addictive nature of tobacco, and the benefits of quitting.</b>	‘I believe it’s a good cause’ ‘To know more about my addiction to tobacco’ ‘To get insight on why I refuse to stop smoking’ ‘To learn more about the dangers of smoking’	<b>40.0% (102)</b>
<b>Quit assistance</b>	<b>Help to quit or change smoking or information on how to quit smoking once participant is ready to quit.</b>	‘Interested in eventually quitting smoking’ ‘To get help to try to quit’ ‘Interested in new quitting smoking techniques’	<b>23.9% (61)</b>
Response unrelated to question	Participant clearly did not answer the question. Rather than providing reasons for participating in the study, the participant provided reasons for smoking or reasons to quit.	‘I am under a lot of stress and it helps me cope’ ‘I just like to smoke’ ‘Because it makes your clothes have a bad smell’ ‘Better my health’	16.5% (42)
Other, not categorized	Responses that failed to fit any of the established categories.	‘To be heard’ ‘Personal control of choices’ ‘What’s the worst that can happen’	11.4% (29)
Study target audience	The study is perfect for smokers who are not ready to quit.	‘Not ready to quit smoking’ ‘Never thought about quitting’ ‘Refreshing to see a flyer that seemed to be targeted at me; smokers who aren’t ready to quit’.	9.4% (24)
Recommended by family/friend	Wanted to appease family or friends who encouraged study participation or expressed dissatisfaction with their smoking.	‘Family pressure to quit smoking’ ‘My husband suggested it’ ‘My friend told me about it’	4.3% (11)

Simplified categories are marked in bold. Bolded categories were used in the quantitative analyses.

<sup>a</sup>Percentages do not add to 100 as participants could have endorsed more than one reason.



## Results

### Recruitment

Over a 15-month period, 766 potential participants contacted study staff and were screened for eligibility. Of those, 57.2% (438/766) were invited to an in-person visit to reassess their eligibility; 58.2% (255/438) attended that visit, met all study criteria, and were enrolled in the study. The most common reasons for exclusion included being too motivated to quit (7 or higher on a 0–10 scale) at the initial screening ( $n=266$ ) and failing to attend the in-person rescreening/baseline visit ( $n=149$ ). In all, 33.3% (255/766) of those who called the study telephone line were successfully enrolled in the trial. The recruitment methods resulted in 17 enrollees per month.

Analysis of how smokers heard about the study indicated that more than half (57%, 436/766) heard about the study informally, by word-of-mouth from friends, family, neighbors, co-workers and fellow transit riders. The other frequently cited ways of hearing about the study included newspaper advertisements (19%, 145/766) and referral from a clinic, health center or campus flyer (10%, 78/766). An additional 11% (84/766) of smokers heard about the study from sources that were mentioned infrequently (such as Craigslist that was mentioned by three people; the Facebook advertisement was not mentioned) or a source that did not fit into any of the predetermined categories. Twenty-three people did not indicate how they heard about the study. The direct cost per participant enrolled that was associated with each of these recruitment categories was: informally by word of mouth \$0, newspaper advertisements \$47.33, referral \$6.73 and other \$33.33.

The demographic and smoking characteristics of enrolled participants are shown in Table II. More than half of participants were African American (69%) and reported monthly household incomes of less than \$1000 (65%). Participants' baseline mean motivation to quit smoking was low (1.9 on a 0–10 scale), with slightly higher but still low confidence to quit smoking (3.6 on a 0–10 scale).

**Table II.** Baseline characteristics, study engagement, and study outcomes of enrolled participants ( $N=255$ )

	Statistic
<b>Baseline characteristics</b>	
Female, % ( $n$ )	43.1 (110)
African American/Black, % ( $n$ )	68.6 (166)
Hispanic, % ( $n$ )	2.7 (7)
Age, mean (SD)	45.32 (10.82)
Monthly household income <\$1000, % ( $n$ )	65.3 (147)
High school degree or higher, % ( $n$ )	84.71 (216)
Smoked within 30 minutes of waking, % ( $n$ )	90.2 (230)
Number of quit attempts in past 3 months, mean (SD)	0.24 (.86)
Age at first cigarette, mean (SD)	16.27 (5.02)
Cigarettes smoked per day, mean (SD)	16.81 (9.51)
Motivation to quit, mean (SD)	1.91 (2.24)
Confidence to quit, mean (SD)	3.64 (3.60)
<b>Study engagement</b>	
Completed all counseling sessions (MI and HE only, $n=204$ ), % ( $n$ )	83.8 (171)
Completed all assessments, % ( $n$ )	89.02 (227)
<b>Study outcomes at Week 26</b>	
Motivation to quit ( $N=228$ ), mean (SD)	5.39 (3.60)
Confidence to quit ( $N=228$ ), mean (SD)	6.15 (3.29)
Any quit attempt since baseline ( $N=255$ ), % ( $n$ )	54.12 (138)
Verified quit, % ( $n$ )	4.0 (11)

### Reasons for participating

Enrolled participants listed 644 reasons for participating in the study. Table I presents the reasons for participating, grouped by the initial eight categories. Four categories were mentioned by at least 20% of participants: (i) to receive compensation (Financial Incentives), (ii) curiosity about the research study or a desire to help others (Research Interest or Altruism), (iii) to learn about the risks of smoking and the benefits of quitting (Education and Insight), and (iv) desire to get help with reducing or quitting smoking (Quit Assistance). All subsequent analyses focus on these four categories indicated in bold on Table I.

On average participants provided 1.51 reasons for participating ( $SD=0.85$ , range 0–3). We found one association between the number of reasons (rather than a specific reason) provided by participants and all the demographic, study participation and study

outcome variables of interest (data not shown). Participants who reported their ethnicity as White listed more reasons for participating (mean 1.85, SD 0.74) compared with those who reported their ethnicity as Black (mean 1.34, SD 0.84,  $P < 0.001$ ). This suggests that associations between specific reasons and other variables of interest were likely not due to the fact that some participants listed more reasons than others did. By chance, participants who reported participating for Quit Assistance and Research or Altruism were not equally distributed across the three treatment conditions ( $P_s < 0.05$ ).

### Reasons for participating and baseline characteristics

To explore the independent effect of each reason for participating and baseline characteristics, we examined multivariate regression models with baseline characteristics as the dependent variables (Table IV). Those who mentioned Financial Incentives were more likely to report higher confidence to quit at baseline ( $P = 0.008$ ) and indicate their ethnicity was White rather than Black ( $P = 0.0001$ ). Those who mentioned participating for Quit Assistance reported more quit attempts in the prior 3 months at baseline ( $P = 0.02$ ), higher levels of motivation to quit at baseline ( $P < 0.0001$ ) and indicated their ethnicity was White ( $P = 0.03$ ). Those who mentioned Research/Altruism were more likely to be younger ( $P = 0.004$ ), report their ethnicity as White rather than Black ( $P = 0.004$ ) and have a high school degree or above ( $P = 0.0493$ ).

### Reasons for participating and study engagement

Most participants completed all study activities (Table II). All participants in the BA arm completed the baseline counseling session. Of those in the MI and HE conditions, 83.8% completed all four counseling sessions and 89% of all participants completed the two follow up assessments. Attending all four (versus three or fewer) counseling sessions and completing all study assessments by reason for participation is shown on Table III. When all four reasons for participating were included together in

logistic regression models (Table IV), none of the reasons was independent predictors of any study engagement variables.

### Reasons for participating and study outcomes

Study outcomes at 26 weeks for participants who mentioned each of the four reasons for participating in the study are shown in Table III. Together all four reasons for participating were included in multiple regression models predicting study outcomes. Separate models were used to predict three study outcomes at Week 26: motivation to quit, confidence to quit and quit attempts. As can be seen in Table IV, participants who mentioned Quit Assistance averaged 1.4 points higher on the motivation to quit scale ( $P = 0.011$ ) and had over twice the odds of a quit attempt ( $P = 0.003$ ), compared with those who did not mention Quit Assistance. The same pattern was evident when controlling for baseline variables that are known to predict study outcomes (motivation and confidence to quit, number of cigarettes smoked per day) and treatment assignment in the adjusted models.

## Discussion

Findings from this study indicate that it is feasible to recruit smokers who are not motivated to quit using reactive recruitment methods, especially targeted print advertisements and referrals from family members, friends and acquaintances. While unplanned, the most common (and least costly) way smokers heard about the study was from study participants, which is a form of snowball sampling [26]. Smokers participated in the study for a variety of reasons, and their reasons were associated with few baseline characteristics. Participating to receive help with quitting was associated with favorable outcomes.

Recruitment for this study required the use of only a few recruitment strategies, which is in contrast to the intensive strategies often necessary to recruit smokers who are motivated to quit [14, 27]. It may have been particularly important that all materials for the current study stressed that the study was for

**Table III.** Analysis of study outcomes and engagement by endorsement of reasons for participating (results shown in bold are significant)

	Financial incentives				Education/insight				Quit assistance				Research/altruism	
	Mentioned		Not mentioned		Mentioned		Not mentioned		Mentioned		Not mentioned		Mentioned	Not mentioned
	M (SD)	% (n)	M (SD)	% (n)	M (SD)	% (n)	M (SD)	% (n)	M (SD)	% (n)	M (SD)	% (n)	M (SD)	% (n)
<b>Week 26 outcomes</b>														
Motivation to quit	228	5.22 (3.59)	5.52 (3.61)	5.43 (3.49)	5.36 (3.68)	<b>7.08 (3.13)<sup>†</sup></b>	<b>7.00 (2.92)<sup>*</sup></b>	<b>4.80 (3.57)<sup>†</sup></b>	<b>5.86 (3.37)<sup>*</sup></b>	<b>4.76 (3.37)<sup>*</sup></b>	<b>5.87 (3.70)<sup>*</sup></b>	<b>4.76 (3.37)<sup>*</sup></b>	<b>5.63 (3.39)<sup>*</sup></b>	<b>6.55 (3.17)<sup>*</sup></b>
Confidence to quit	228	6.20 (3.41)	6.12 (3.21)	6.25 (3.01)	6.09 (3.47)	<b>7.00 (2.92)<sup>*</sup></b>	<b>7.00 (2.92)<sup>*</sup></b>	<b>5.86 (3.37)<sup>*</sup></b>	<b>5.86 (3.37)<sup>*</sup></b>	<b>5.63 (3.39)<sup>*</sup></b>	<b>6.55 (3.17)<sup>*</sup></b>	<b>5.63 (3.39)<sup>*</sup></b>	<b>6.55 (3.17)<sup>*</sup></b>	
Total		% (n)	% (n)	% (n)	% (n)	% (n)	% (n)	% (n)	% (n)	% (n)	% (n)	% (n)	% (n)	% (n)
Any quit attempt since baseline														
Yes	138	<b>38.4 (53)<sup>*</sup></b>	<b>61.6 (85)<sup>*</sup></b>	44.2 (61)	55.8 (77)	<b>32.6 (45)<sup>†</sup></b>	<b>32.6 (45)<sup>†</sup></b>	<b>67.4 (93)<sup>†</sup></b>	<b>67.4 (93)<sup>†</sup></b>	<b>35.5 (49)<sup>**</sup></b>	<b>64.5 (89)<sup>**</sup></b>	<b>35.5 (49)<sup>**</sup></b>	<b>64.5 (89)<sup>**</sup></b>	
No	117	<b>52.1 (61)<sup>*</sup></b>	<b>47.9 (56)<sup>*</sup></b>	35.0 (41)	65.0 (76)	<b>13.7 (16)<sup>†</sup></b>	<b>13.7 (16)<sup>†</sup></b>	<b>86.3 (101)<sup>†</sup></b>	<b>86.3 (101)<sup>†</sup></b>	<b>52.1 (61)<sup>**</sup></b>	<b>47.9 (56)<sup>**</sup></b>	<b>52.1 (61)<sup>**</sup></b>	<b>47.9 (56)<sup>**</sup></b>	
Verified quit														
Yes	11	18.2 (2)	81.8 (9)	45.5 (5)	54.5 (6)	36.4 (4)	36.4 (4)	63.6 (7)	63.6 (7)	18.2 (2)	81.8 (9)	18.2 (2)	81.8 (9)	
No	244	45.9 (112)	54.1 (132)	39.8 (97)	60.2 (147)	23.4 (57)	23.4 (57)	76.6 (187)	76.6 (187)	44.3 (108)	55.7 (136)	44.3 (108)	55.7 (136)	
Total		% (n)	% (n)	% (n)	% (n)	% (n)	% (n)	% (n)	% (n)	% (n)	% (n)	% (n)	% (n)	% (n)
<b>Study engagement</b>														
Completed all counseling sessions														
Yes	171	46.2 (79)	53.8 (92)	39.2 (67)	60.8 (104)	26.3 (45)	26.3 (45)	73.7 (126)	73.7 (126)	42.7 (73)	57.3 (98)	42.7 (73)	57.3 (98)	
No	33	42.4 (14)	57.6 (19)	30.3 (10)	69.7 (23)	18.2 (6)	18.2 (6)	81.8 (27)	81.8 (27)	45.5 (15)	54.5 (18)	45.5 (15)	54.5 (18)	
Completed all assessments														
Yes	227	42.7 (97)	57.3 (130)	40.1 (91)	59.9 (136)	<b>26.0 (59)<sup>*</sup></b>	<b>26.0 (59)<sup>*</sup></b>	<b>74.0 (168)<sup>*</sup></b>	<b>74.0 (168)<sup>*</sup></b>	42.7 (97)	57.3 (130)	42.7 (97)	57.3 (130)	
No	28	60.7 (17)	39.3 (11)	39.3 (11)	60.7 (17)	<b>7.1 (2)<sup>*</sup></b>	<b>7.1 (2)<sup>*</sup></b>	<b>92.9 (26)<sup>*</sup></b>	<b>92.9 (26)<sup>*</sup></b>	46.4 (13)	53.6 (15)	46.4 (13)	53.6 (15)	

SD, standard deviation.

<sup>\*</sup>*P* < 0.05;

<sup>\*\*</sup>*P* < 0.01;

<sup>†</sup>*P* < 0.001—significance achieved.



**Table IV.** Regression analysis showing the associations between reasons for participating and baseline characteristics, study engagement and study outcomes at Week 26 (results shown in bold are significant)

Dependent variables	Reasons for participating (independent variables)			R <sup>2</sup>
	Financial incentives	Education/insight	Quit assistance	
<b>Baseline characteristics</b>				
Age	B = -0.71, SE = 1.36	B = -0.18, SE = 1.38	B = -0.41, SE = 1.63	<b>B = -4.05, SE = 1.40**</b>
Age at first cigarette	B = -0.50, SE = 0.64	B = 0.79, SE = 0.65	B = 0.27, SE = 0.76	B = 0.52, SE = 0.66
Number of quit attempts in past 3 mo	B = -0.02, SE = 0.11	B = 0.06, SE = 0.11	<b>B = 0.30, SE = 0.13*</b>	B = -0.12, SE = 0.11
Motivation to quit at baseline	B = 0.10, SE = 0.28	B = 0.26, SE = 0.28	<b>B = 1.59, SE = 0.33†</b>	B = 0.03, SE = 0.28
Confidence to quit at baseline	<b>B = 1.14, SE = 0.43**</b>	B = 0.03, SE = 0.43	B = 0.49, SE = 0.51	B = 0.05, SE = 0.44
Male gender	OR = 1.60 (0.96–2.66)	OR = 1.54 (0.91–2.58)	OR = 1.28 (0.70–2.37)	OR = 0.89 (0.53–1.50)
White ethnicity	<b>OR = 3.17 (1.76–5.70)†</b>	OR = 1.25 (0.69–2.26)	<b>OR = 2.21 (1.09–4.47)*</b>	<b>OR = 2.45 (1.34–4.52)**</b>
Monthly household income \$1001 or above	OR = 1.53 (0.87–2.68)	OR = 1.22 (0.69–2.15)	OR = 1.03 (0.53–2.01)	OR = 1.36 (0.77–2.43)
Education high school degree or above	OR = 1.31 (0.69–2.51)	OR = 1.46 (0.75–2.83)	OR = 1.04 (0.50–2.18)	<b>OR = 2.00 (1.00–3.99)*</b>
Treatment assignment HE	OR = 1.30 (0.64–2.61)	OR = 0.78 (0.39–1.56)	OR = 1.86 (0.81–4.28)	OR = 0.71 (0.35–1.46)
Treatment assignment MI	OR = 1.20 (0.60–2.42)	OR = 0.53 (0.26–1.06)	OR = 0.97 (0.40–2.37)	OR = 1.35 (0.67–2.74)
<b>Study engagement</b>				
Completed all counseling sessions (n = 204)	OR = 1.27 (0.59–2.72)	OR = 1.55 (0.68–3.50)	OR = 1.72 (0.64–4.57)	OR = 1.02 (0.47–2.23)
Completed all assessments	OR = 0.53 (0.23–1.18)	OR = 1.05 (0.46–2.40)	OR = 4.33 (0.98–19.21)	OR = 1.20 (0.49–2.47)
<b>Study outcomes at Week 26</b>				
<b>Unadjusted regression analysis</b>				
Motivation to quit	B = -0.06, SE = 0.45	B = -0.06, SE = 0.46	<b>B = 1.40, SE = 0.55*</b>	B = -0.68, SE = 0.47
Confidence to quit	B = -0.15, SE = 0.42	B = 0.11, SE = 0.41	B = 0.77, SE = 0.48	B = -0.70, SE = 0.42
Any quit attempt(s)	OR = 0.64 (0.38–1.08)	OR = 1.44 (0.85–2.44)	<b>OR = 2.68 (1.39–5.19)**</b>	OR = 0.64 (0.38–1.08)
<b>Adjusted regression analysis<sup>a</sup></b>				
Motivation to quit	B = -0.07, SE = 0.46	B = -0.02, SE = 0.45	<b>B = 1.27, SE = 0.55*</b>	B = -0.58, SE = 0.47
Confidence to quit	B = -0.16, SE = 0.41	B = 0.18, SE = 0.41	B = 0.51, SE = 0.49	B = -0.72, SE = 0.42
Any quit attempt(s)	OR = 0.63 (0.37–1.09)	OR = 1.41 (0.82–2.44)	<b>OR = 2.03 (1.01–4.07)*</b>	OR = 0.64 (0.37–1.11)

SE, standard error; OR, odds ratio (95% confidence intervals); B, unstandardized parameter estimates.  
<sup>a</sup>Adjusted for baseline motivation to quit, baseline confidence to quit, baseline cigarettes smoked per day, and treatment group assignment.  
\**P* < 0.05;  
\*\**P* < 0.01;  
†*P* < 0.001—significance achieved.

smokers who were 'not interested' or 'not quite ready' to quit and that quitting was not required. The unplanned but successful dissemination of information about the study via word-of-mouth suggests that practitioners and researchers may be able to harness interpersonal strategies to enhance recruitment of unmotivated smokers. Recruitment methods, such as advertisements targeting friends and family members (rather than the smoker themselves) maybe particularly effective for smokers who are unmotivated to quit and may require messages tailored for this audience. Smokers or friends of smokers may be more willing to pass along information about research opportunities that do not require smokers to quit. Indeed, since 80% of smokers are not interested in quitting right now, it is likely that smokers know many people who smoke, but few who are ready to quit. Future studies are needed to determine effective recruitment strategies and messages that target friends and family members of smokers who are not ready to quit.

Recruiting a significant proportion (33%) of the potential participants who called the study telephone line may partly be explained by the exclusive use of reactive recruitment approaches, which yielded a pool of smokers who already had some interest in the study. In contrast, studies employing proactive recruitment methods, such as approaching smokers in clinics, will likely approach many people who are not interested or who do not meet the study eligibility criteria. This may especially be the case for studies that recruit smokers who must be interested in quitting immediately, since most smokers are not. It is also possible that the history of other smoking trials in this geographic area [20, 28–30] which targeted smokers interested in quitting may have indirectly contributed to recruitment. Smokers not motivated to quit might have been particularly interested because prior research opportunities were not suitable for them. Further, having the study office in an inner-city urban area near public transportation may have reduced barriers to participation and facilitated the word-of-mouth recruitment.

Qualitative analyses of reasons for participating identified four commonly endorsed reasons for participating. As anticipated this included obtaining

financial incentives, but less than half of the participants mentioned this reason. Nearly the same percentage also endorsed research interest/altruistic reasons and to gain education and insight. A substantial portion of enrollees participated in the study because they were interested in getting help to quit, which was somewhat unexpected because smokers were included only if they rated their motivation to quit as low and they were not interested in quitting in the next 7 days. Even these smokers with relatively low motivation to quit had at least some motivation. These smokers could be engaged in smoking cessation studies and programs that do not require them to quit immediately to enroll. Further, these results indicate that smokers in induction studies have a variety of reasons for participating including some that could potentially bias enrollment to include certain types of individuals in the study and potentially affect outcomes.

Examination of whether reasons for participating was related to demographic characteristics and study outcomes revealed that ethnicity and age were related to reasons for participating with Whites more likely to participate for financial incentives, quit assistance and research interest/altruism, while younger age and higher education level was associated with participating for research/altruism reasons. This suggests that the amount of study incentives may influence the demographic make-up of induction study participants. Our results also indicated those who participated for quit assistance were more motivated to quit at baseline and had made more quit attempts in the past 3 months, suggesting that reasons for participating could be an important variable that affects study outcomes.

When we examined the association between reasons for participating and study outcomes we found support for this possibility. Participating for quit assistance was the only independent predictor of outcomes. These results suggested that some smokers who are not interested in quitting immediately nevertheless have an interest in learning how to quit, and they are more likely to have successful outcomes (i.e. a quit attempt, higher motivation to quit) in smoking induction interventions. Smokers who are not ready to quit immediately probably vary

in their motivation to quit, and are not homogeneous in their reasons for joining a smoking study, though some, more than others, may benefit from smoking induction interventions. Smokers who express an interest in getting quit assistance but are not presently ready to quit may nonetheless benefit from a smoking intervention.

Concern that smokers who participate for financial reasons may not engage sufficiently in the treatment was not borne out. Participating for Financial Incentives was not a significant predictor in the multivariate models. Thus, while it is likely that the financial incentives prompted people to enroll, participating for the incentives did not seem to have a positive or negative impact on study participation or outcomes.

Taken together results suggest that reasons that smokers have for participating in smoking cessation induction studies may be an important variable that affects the sample characteristics and study outcomes. Researchers conducting induction studies may want to consider documenting reasons for participating as a baseline characteristic to assess any impact on the findings and to facilitate comparisons across studies. With respect to enhancing recruitment it is also possible that researchers could explicitly highlight the variety of reasons smokers agree to participate in their recruitment materials (e.g. highlight incentives, the benefit of the research to patients and the opportunity to learn about one's smoking behavior). This may also ensure that participants who enroll have a variety of reasons for participating.

Limitations of this study include the use of open-ended single questions for assessing recruitment and reasons for participation. Multiple questions or structured interviews may have provided more detailed information, especially if respondents were asked to rank the importance of their reasons for participating. Further, the study methods did not allow for an assessment of how many smokers were reached by each recruitment method. The study also did not provide information to understand why some smokers who completed the telephone screening failed to attend the in-person final rescreening visit. It would be valuable for future research to compare the smoking and motivational characteristics of those who

volunteer to those who decline and the characteristics of smokers in the broader community to better understand the representativeness of smokers in induction studies. The low quit rate prevented a meaningful comparison across categories for participating. The results should be generalized cautiously beyond communities with active tobacco research efforts and the population of lower socioeconomic status African Americans that were predominant in this study.

Smokers who are not motivated to quit can be successfully engaged in treatment research and do so for a variety of reasons. Those who participate to get assistance with quitting may be more successful. Reasons for unmotivated smokers' interest in participating in induction studies may influence sample characteristics and study outcomes and can help practitioners and researchers design effective strategies to engage this population.

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### Conflict of interest

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None declared.

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### Trial registration

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ClinicalTrials.gov NCT01188018

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