


# Financial Hardship, Motivation to Quit and Post-Quit Spending Plans among Low-Income Smokers Enrolled in a Smoking Cessation Trial

Erin Rogers<sup>1,2</sup> , Jose Palacios<sup>1</sup>, Elizabeth Vargas<sup>1</sup>, Christina Wysota<sup>1</sup>, Marc Rosen<sup>3,4</sup>, Kelly Kyanko<sup>1</sup>, Brian D. Elbel<sup>1,5</sup> and Scott Sherman<sup>1,2</sup>

<sup>1</sup>Department of Population Health, New York University School of Medicine, New York, NY, USA.

<sup>2</sup>VA NY Harbor Healthcare System, New York, NY, USA. <sup>3</sup>Department of Psychiatry, Yale University, West Haven, CT, USA. <sup>4</sup>VA Connecticut Healthcare System, West Haven, CT, USA.

<sup>5</sup>Wagner Graduate School of Public Service, New York University, New York, NY, USA.

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## ABSTRACT

**BACKGROUND:** Tobacco spending may exacerbate financial hardship in low-income populations by using funds that could go toward essentials. This study examined post-quit spending plans among low-income smokers and whether financial hardship was positively associated with motivation to quit in the sample.

**METHODS:** We analyzed data from the baseline survey of a randomized controlled trial testing novel a smoking cessation intervention for low-income smokers in New York City ( $N = 410$ ). Linear regression was used to examine the relationship between financial distress, food insecurity, smoking-induced deprivation (SID) and motivation to quit (measured on a 0-10 scale). We performed summative content analyses of open-ended survey questions to identify the most common plans among participants with and without SID for how to use their tobacco money after quitting.

**RESULTS:** Participants had an average level of motivation to quit of 7.7 ( $SD = 2.5$ ). Motivation to quit was not significantly related to having high financial distress or food insecurity ( $P > .05$ ), but participants reporting SID had significantly lower levels of motivation to quit than those without SID ( $M = 7.4$  versus  $7.9$ ,  $P = .04$ ). Overall, participants expressed an interest in three main types of spending for after they quit: *Purchases*, *Activities*, and *Savings/Investing*, which could be further conceptualized as spending on *Oneself or Family*, and on *Needs or Rewards*. The top three spending plans among participants with and without SID were travel, clothing and savings. There were three needs-based spending plans unique to a small number of participants with SID: housing, health care and education.

**CONCLUSIONS:** Financial distress and food insecurity did not enhance overall motivation to quit, while smokers with SID were less motivated to quit. Most low-income smokers, including those with SID, did not plan to use their tobacco money on household essentials after quitting.

**KEYWORDS:** tobacco, smoking cessation, food insecurity, financial hardship

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**CORRESPONDING AUTHOR:** Erin Rogers, Population Health, New York University School of Medicine, New York, USA. Email: Erin.Rogers@nyulangone.org

## Introduction

Cigarette smoking remains the largest cause of preventable mortality in the U.S., and members of low-income households are twice as likely to smoke as high-income households—leading to direct health harms and disproportionate rates of tobacco-related illness (e.g., cancer, heart disease) and mortality in low-income populations.<sup>1</sup> Smoking may further indirectly harm health and exacerbate financial hardship in low-income smokers through a financial mechanism, whereby tobacco spending crowds-out spending on health-promoting essentials. Tobacco expenditures have been associated with reduced spending on housing, food and clothing,<sup>2</sup> and food insecurity (lack of consistent access to food due to financial constraints) is more common and more severe among households with adults who smoke.<sup>3</sup>

Given the immediate potential financial consequences of tobacco spending for low-income smokers, smokers experiencing financial hardship may be especially motivated to quit or may be especially sensitive to the financial losses of smoking and gains of cessation. However, the relationship between financial hardship and motivation to quit remains mixed in the literature. Some studies have seen no significant associations between financial distress and motivation to quit or other indicators of motivation such as quit attempts.<sup>4,5</sup> On the other hand, some research has reported higher motivation in people with higher financial distress through both direct measures of motivation and indirect measures such as use of quitlines and quit attempts.<sup>6-9</sup> For example, Wilson et al found that in New Zealand, national quitline usage was higher among people with financial stress.<sup>10</sup> Caleyachetty et al however, saw the opposite



relationship, noting fewer quit attempts from smokers with financial difficulty.<sup>11</sup>

The inconsistent literature on the relationship between financial hardship and motivation to quit may be explained by the complex nature of the relationship. While financial insecurity can increase one's desire to quit for financial reasons, financial stress is a commonly cited barrier to quitting and a contributor to smoking maintenance.<sup>8,9,12-14</sup> Smokers often use cigarettes as a coping mechanism for stress, and as Siahpush et al. points out, the relationship between smoking and financial stress is likely bidirectional.<sup>12</sup> Another potential explanation for the inconsistent relationship between financial hardship and motivation to quit is that some smokers may not perceive the financial consequences of tobacco use or attribute their financial distress to tobacco spending. Public health campaigns and quit messaging within health care often focus on the health consequences of tobacco use. Therefore, even when experiencing financial distress, some smokers may not attribute financial hardship to their tobacco use or view cessation as a potential solution to their distress—thus breaking a potential link between financial hardship and motivation to quit. Lastly, the relationship between financial hardship and motivation to quit may be heterogeneous even within low-income populations depending on the nature or severity of one's hardship. For example, people experiencing moderate food insecurity or difficulties paying small bills may benefit from the discretionary income released through the cessation of tobacco spending, but tobacco cessation would offer limited help for people experiencing large sources of financial distress such as threats of eviction or large medical expenses. Indeed, estimates suggest that only 10-30% of low-income smokers report experiencing a phenomenon called smoking-induced deprivation (SID), defined as the inability to afford household or personal essentials *because* of money spent on tobacco. Therefore, motivation to quit may be increased only among people experiencing *tobacco-related* financial hardship, such as SID.

Gaining a better understanding of how financial hardship and motivation to quit relate to one another can aid in the development of cessation policies and programs for smokers living in poverty. Tucker-Seeley and Thorpe recently proposed a model of financial hardship that distinguishes between material, psychosocial, and behavioral components of financial hardship.<sup>11</sup> The material component refers to one's actual financial resources. The psychosocial component refers to how one feels about his or her resources. The behavioral component refers to what one does with his or her limited resources, such as purposeful economizing or reducing spending on essentials. The present study aimed to examine the relationships between different types of financial hardship (material, psychosocial, behavioral) and motivation to quit among a sample of low-income smokers living in New York City (a city with a high cost of living and the highest cigarette taxes in the U.S.). The study further aimed to explore post-quit spending goals among

low-income smokers with and without tobacco-related behavioral financial hardship (SID). We hypothesized that all three types of financial hardship would be positively associated with motivation to quit and that smokers with SID would be more likely to plan to spend their tobacco money on household essentials after quitting.

## Methods

### *Source of data and study design*

The data for this analysis came from the baseline survey of a two-arm randomized controlled trial testing an intervention that integrated financial coaching into smoking cessation coaching for low-income smokers (versus a waitlisted control arm receiving usual smoking cessation care during the waiting period). The parent study was approved by the New York University School of Medicine Institutional Review Board (IRB).

### *Study population and recruitment*

People were eligible for the parent study if they: (1) were aged  $\geq 18$  years, (2) had smoked a cigarette in the past 30 days, "even a puff", (3) had self-reported income  $< 200\%$  of the current federal poverty level, (4) New York City resident, (5) spoke English or Spanish, (6) were able to provide informed consent, and (7) did not have a representative who managed his/her funds. Individuals were excluded if they reported being pregnant or breastfeeding due to their inability to receive nicotine replacement therapy (NRT) during the parent study.

Participants were recruited from Bellevue Hospital Center and NYU Langone-Brooklyn in New York City. Study staff identified potential participants through an electronic medical record (EMR) query of patients screened to be recent smokers by a physician or nurse at each site. Staff called potential participants on the EMR list to describe the study, screen them for eligibility and schedule an in-person consent appointment. Participants were also recruited through weekly community-based newspaper ads, physician referrals and incentivized referrals from other study participants. All participants signed an IRB-approved consent form prior to completing any study procedures.

### *Interventions*

Participants ( $N = 410$ ) were randomized 1:1, stratified by site, to an Intervention Group or a Waitlist Control Group. The Intervention Group participants immediately began a 9-week, multisession intervention that integrated financial coaching and smoking cessation coaching. The integrated intervention was designed to reduce participants' financial stress as a barrier to cessation and to help them transition from spending money on cigarettes to spending on health-promoting essentials. Intervention coaches screened for, and referred participants to,

financial benefits programs, and helped participants develop a household budget that highlighted funds spent on tobacco and helped participants identify short-term and long-term financial goals that could be achieved through cessation of tobacco spending. The intervention also provided four weeks of NRT (patch, gum or lozenge). The Waitlist Control Group participants were eligible to receive the intervention after a waiting period of 6 months. During the 6-month waiting period, they could receive usual cessation care from their health care providers or try to quit on their own using over-the-counter cessation medications or community resources (e.g., state quitline).

### *Baseline data collection and measures*

Participants completed an in-person baseline survey after enrollment and before randomization that assessed the following measures:

*Sociodemographics:* Participants reported their date of birth, race, ethnicity, marital status, annual household income, and highest level of education.

*Tobacco use and tobacco spending:* The survey assessed time to first cigarette after waking, which has been reported in the literature to be a predictive and valid single-item measure of nicotine dependence.<sup>15</sup> The survey used questions from the Population Assessment of Tobacco and Health study's adult questionnaire to assess motivation to quit using a 0-10 scale and number of cigarettes smoked per day.<sup>16</sup> Participants were also asked to report the amount they typically spend on a pack of cigarettes or per cigarette if they typically purchase loose cigarettes. For each participant, a monthly pack variable was calculated by multiplying their cigarettes per day by 30 and dividing by 20 (the typical number of cigarettes per pack). This monthly pack variable was then multiplied by cigarette price to obtain an estimate of the participants' monthly spending on cigarettes.

*Financial hardship:* The survey assessed three types of financial hardship: (1) *psychosocial* hardship which we operationalized as financial distress, (2) *material* hardship which we operationalized as food insecurity (i.e., lack of sufficient financial resources for food), and (3) *behavioral* hardship which we operationalized as SID. Four domains of financial distress were assessed using questions from the InCharge Financial Distress/Financial Well-being Scale.<sup>17</sup> These were: (1) level of personal stress in general, (2) frequency of living paycheck-to-paycheck, (3) frequency of worrying about making monthly living expenses, and (4) level of confidence in being able to afford a \$1000 emergency. Participants answered each question on a 0-10 scale, where 0 represented the lowest level of stress and 10 represented the highest level of stress. For this analysis, responses were then dichotomized as High (answer  $\geq 6$ ) or Low (answer  $< 6$ ).

Food insecurity was assessed using the United States Department of Agriculture (USDA) six-item food security module.<sup>8</sup> The sum of affirmative responses to the six questions

were converted to the following scoring criteria: 0-1 affirmatives indicated high or marginal food security, a score of 2-4 indicated low food security and 5-6 indicated very low food security. For the purpose of this analysis, low and very low food security were collapsed into one variable "food insecure."

SID was assessed with a single Yes/No question adapted from the literature<sup>18</sup> asking: "In the last 30 days, has there been a time when the money you spent on cigarettes resulted in not having enough money for any of these items: housing, food, household utilities, health care, transportation, and necessary clothing?"

*Post-quit spending plans.* Using an open-ended question, participants were asked to name their top goals for how they would like to use their tobacco money after quitting. Participants were encouraged, but not required, to provide up to three goals.

### *Data analysis*

Quantitative data analysis was conducted using IBM SPSS software, version 23. Descriptive statistics including means, standard deviations, and frequencies were conducted for sociodemographic and tobacco use variables to characterize the study sample and to determine the prevalence of high financial distress, food insecurity, and SID in the sample. Linear regression models were used to determine the associations between participants' financial hardship measures and motivation to quit, controlling for sociodemographics (age, sex, race, ethnicity, income, education). Significance was defined as a *P*-value  $< 0.05$ .

We used a summative content analysis approach<sup>19</sup> to analyze post-quit spending plan data. We first ran frequencies of participant responses to the open-ended question about post-quit spending goals to identify patterns and themes in responses. We then created and recoded the data into higher-level spending categories based on the answer patterns. For example, when participants said they wanted to spend their tobacco money on vacations, visiting family, cruises or other forms of traveling, these answers were recoded into a new broad "travel" category. Once the data were recoded into broad categories, we ranked the data based on frequency of participants endorsing each goal. To explore differences in goals between participants with and without SID, we stratified the ranking by presence (Yes/No) of SID.

## **Results**

Table 1 displays the characteristics of the study sample. Participants were on average 53.3 years old (*SD* = 11.2) and were predominantly male, Black or African American, non-Hispanic, unmarried, and unemployed. Participants were smoking on average 12 cigarettes per day. Recent SID was reported by 47% of participants, 57% were food insecure and 64% had high stress about their personal finances. Participants

**Table 1.** Participant characteristics ( $N = 410$ ).

VARIABLE	$N$ (%) OR MEAN ( $SD$ )
Sociodemographics	
Age	53.3 (11.2)
Female gender	144 (35%)
Race	
Black or African American	187 (46%)
White	81 (20%)
Other	142 (35%)
Hispanic	161 (39%)
Immigrant	149 (36%)
Spanish language preferred	64 (16%)
Highest level of education completed	
Less than high school	106 (26%)
High school/GED	137 (33%)
Associates Degree or some 4-year college	119 (29%)
4-year college graduate or higher	44 (11%)
Other (e.g., trade school)	4 (1%)
Employed	103 (25%)
Married or living with partner	74 (18%)
Annual income	\$13680 (10069)
Tobacco use and quit attitudes	
Cigarettes smoked per day	11.7 (7.2)
Time to first cigarette	
<5 minutes	146 (36%)
6-30 minutes	123 (30%)
30-60 minutes	50 (12%)
>60 minutes	90 (22%)
Typical price paid for pack of cigarettes	\$10.6 (3.7)
Monthly tobacco spending	\$182.4 (121.8)
Motivation to quit	7.7 (2.5)
Confidence in quitting	7.1 (5.4)
Financial hardship	
Behavioral: smoking-induced deprivation	194 (47%)
Material: food insecure	234 (57%)
Psychosocial	
Low financial satisfaction	315 (77%)

(Continued)

**Table 1.** (Continued)

VARIABLE	$N$ (%) OR MEAN ( $SD$ )
High level of worry about monthly expenses	285 (70%)
Low confidence in paying for \$1 000 emergency	286 (70%)
Frequently having difficulty affording leisure activity	287 (70%)
Frequently living paycheck-to-paycheck	345 (84%)
High financial stress in general	262 (64%)

reported an average annual income of \$13 680 ( $SD = \$10 069$ ) per year and were spending approximately \$182.4 ( $SD = \$121.8$ ) per month on cigarettes.

Table 2 shows the relationship between participants' financial hardship measures and motivation to quit, controlling for sociodemographics. Motivation to quit was not significantly related to participants' financial stress in general, frequency of living paycheck-to-paycheck, frequency of worry about monthly living expenses, or confidence in affording a financial emergency ( $P > .05$ ). Participants reporting SID had significantly lower levels of motivation to quit than those without SID ( $M = 7.4$  versus  $7.9$ ;  $\beta = -0.39$ ,  $SE = 0.20$ ,  $P = 0.04$ ).

Figure 1 shows the themes in post-quit spending plans reported by participants at baseline. Participants expressed an interest in three main *types* of spending. The first type was *Purchases*. Purchases included items such as clothing, home goods (e.g., furniture, television), transportation costs, paying bills, buying gifts for loved ones or helping loved ones pay for their expenses, education-related purchases, visiting the doctor or getting dental work, and buying personal hygiene products. The second spending type was *Activities*, such as traveling, socializing, going out to eat, engaging in entertainment (e.g., movies, concerts), and engaging in hobbies or exercise-related activities. The final main spending type was *Investments and Savings*. Participants spoke of wanting to invest the money, either through the stock market or by investing in their personal business. Participants also spoke about wanting to save their tobacco money, open a bank account, or save for their children's or grandchildren's college expenses.

Our summative content analysis of the post-quit spending question also revealed that participants' spending goals could be further conceptualized based on the spending recipient (*Family* and/or *Oneself*) and whether the spending was addressing a *Need* or was serving as a luxury or *Reward*. For example, within the *Family-Self* dichotomy, many of the activities that participants planned after quitting were associated with wanting to visit or spend more time with family, and some participants intended to purchase items for their grandchildren or children. On the other hand, many participants intended to



**Table 2.** Relationships between participant financial hardship measures and motivation to quit ( $N = 410$ ).

VARIABLE	B (SE)	P-VALUE
Behavioral: past 30-day smoking-induced deprivation	<b>-0.39 (0.20)</b>	<b>0.04</b>
Material: past-year food insecurity	-0.16 (0.28)	0.56
Psychosocial		
High financial stress in general	0.20 (0.28)	0.48
Frequently living paycheck-to-paycheck	0.08 (0.36)	0.81
Low confidence to afford \$1 000 emergency	0.30 (0.29)	0.31
Frequently worry about monthly living expenses	0.25 (0.30)	0.41

Notes: Analysis control for participant income, gender, race, ethnicity, and education. Motivation to quit was measured on a 0-10 scale.

spend the money on items for themselves. Within the *Need-Reward* dichotomy, some participants reported wanting to spend their tobacco money on household or personal essentials, such as food, health care or dental work, while other spending plans were not essential, such as general shopping, redecorating the house, traveling or going to the movies.

Table 3 displays the ranking of the top 10 most frequently reported post-quit goals among participants with and without SID. Overall, participants in both groups reported similar goals. The three most common goals in both groups were travel, clothing and savings. However, the relative ranking of the goals differed somewhat between groups. Purchasing clothing was the top goal for participants with SID, while travel was the top goal for participants without SID. Paying bills, purchasing food, engaging in entertainment and purchasing home goods ranked somewhat higher among participants with SID, while going to restaurants and buying gifts ranked slightly higher among people without SID. There were three needs-based goals unique to participants with SID. Eleven percent of participants with SID planned to spend their tobacco savings on housing (e.g., paying rent), and 4% of participants with SID planned to spend their tobacco money on health care or education.

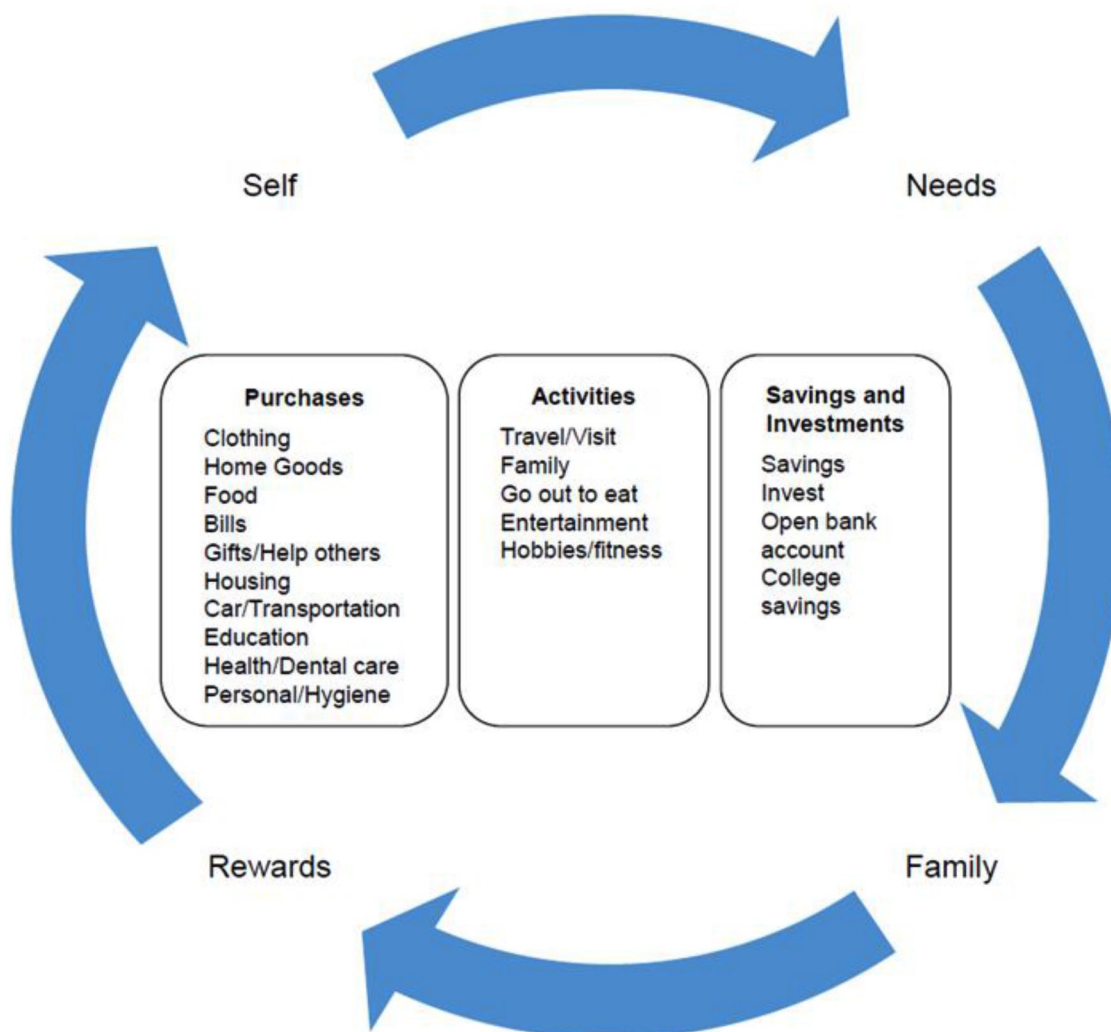
## Discussion

This study found high levels of material, psychosocial and behavioral financial hardship in a sample of low-income smokers enrolled in a smoking cessation study. Most participants were food insecure, almost half reported recent SID, and most were experiencing a high level of distress in the four financial stress domains surveyed (financial distress in general, living paycheck-to-paycheck, worrying about monthly living expenses, and confidence in affording a financial emergency). Results also estimated that participants were spending on average \$182 per month on tobacco (16% of their annual income), which is a relatively large source of discretionary income that could be used to alleviate the household needs identified through the financial hardship measures. However, contrary to our

hypotheses, there were no significant relationships found between participants' level of motivation to quit and most measures of financial hardship. These results are consistent with prior studies finding no significant relationships between financial stress and motivations to quit in low-income populations.<sup>4,5</sup> The only measure that was significantly associated with motivation to quit was the tobacco-related behavioral financial hardship measure (SID). However, unexpectedly, smokers with recent SID had lower motivation to quit than those without recent SID. This is the first study to our knowledge to show lower motivation to quit among people experiencing SID.

This is also the first study to our knowledge to examine post-quit spending plans among low-income smokers getting ready to engage in a smoking cessation attempt, and the results of this examination provides insights into the findings above. Results showed that prior to starting the study intervention, participants had a variety of plans for how to use their tobacco money after quitting, with goals ranging from spending on themselves to spending on others, across three main spending categories (purchase, activities, and savings/investing) representing a mix of needs and luxuries or rewards. Results further found that most participants did not plan to spend their tobacco money on needs after quitting, even participants who reported recently going without needs because of money spent on cigarettes (SID). While there were three unique needs-based spending plans found among participants with SID, the proportion of participants with those plans was <10%. These results suggest that most participants did not view—or plan to use—tobacco cessation as a means to address their financial needs or hardship. Additional work is needed to understand this finding, but it may explain why severity of financial hardship was not related to motivation to quit in our quantitative analyses.

Prior work has shown that people who smoke are motivated to quit for many nonfinancial reasons (social, health, occupational), and low-income populations often use smoking as a means to cope with stress.<sup>10</sup> Additionally, psychosocial and behavioral financial hardship have been shown to be associated with barriers to quitting not measured in this study, including



**Figure 1.** Conceptual framework of post-quit spending goals reported by participants.

depression.<sup>20,21</sup> It is possible that people with high levels of psychosocial, material or behavioral hardship in this study were experiencing barriers to quitting that overwhelmed any finance-related motivations to quit or they were using of cigarettes to cope with psychosocial stressors. This may explain both the lack of relationships between most of the study's financial hardship measures and motivation to quit, as well as explain participants' plans to spend their tobacco money on mood-enhancing items or activities after quitting in order to replace tobacco as a stress reducer.<sup>21</sup>

### Limitations

This study is limited by its analysis of participants enrolled in a smoking cessation study that offered assistance with financial stress. Participants had high levels of motivation to quit overall and their smoking-related motivations may not generalize to a broader low-income population. The study was also located in New York City, a city with high tobacco prices and high cost of living in general. Therefore, results may not generalize to other settings. Another limitation is that the measure of monthly tobacco spending was based on self-reported typical spending

on cigarette packs or loosies, which we then extrapolated to a monthly spending variable. To our knowledge, there are no psychometrically tested measures of retrospective tobacco spending. The data analyzed for this manuscript were collected at baseline, so it would not have been feasible to ask participants to prospectively track actual spending for a month prior to entering the study. Therefore, the tobacco spending estimate may be subject to recall bias and should be interpreted with caution.

### Conclusions

This study conducted a unique examination into the motivations and goals of low-income smokers experiencing three forms of financial hardship. The overall pattern results suggest that while low-income smokers experience high levels of financial hardship in multiple domains of their lives and have a source of discretionary income (tobacco spending) to help, severity of financial hardship was not associated with quitting motivation and most smokers did not plan to use their tobacco money to alleviate hardship after quitting. Cessation programs working with low-income smokers may not benefit from stressing the financial benefits of quitting or such programs

**Table 3.** A ranking by frequency of post-quit spending goals reported at baseline by participants with and without recent SID.

RANK	PARTICIPANTS WITH SID, N = 194			PARTICIPANTS WITHOUT SID, N = 216		
	SPENDING CATEGORY	N	%	SPENDING CATEGORY	N	%
1	Clothing	93	47%	Travel	90	41%
2	Travel	85	43%	Clothing	81	37%
3	Savings	48	24%	Savings	62	29%
4	Entertainment, food, home goods <sup>a</sup>	33	17%	Restaurants	35	16%
5	Bills	24	12%	Home goods	31	14%
6	Restaurants	23	12%	Food	25	12%
7	Housing	21	11%	Entertainment	24	11%
8	Car	17	9%	Gifts/help others	23	11%
9	Gifts/help others	11	6%	Bills	16	7%
10	Education, health care <sup>b</sup>	8	4%	Car	15	7%

Notes: SID (smoking-induced deprivation) was measured with the question “In the last 30 days, has there been a time when the money you spent on cigarettes resulted in not having enough money for any of these items: housing, food, household utilities, health care, transportation, personal hygiene items, or necessary clothing?”

<sup>a</sup>Entertainment, food and home goods tied for fourth place among participants with SID (each were reported by 33 participants).

<sup>b</sup>Education and health care tied for 10th place among people with SID (each were reported by eight participants).

may need to put targeted efforts into increasing smoker insight into the opportunity costs of their tobacco use. Future research should also determine the best methods for addressing the psychosocial barriers to cessation in this vulnerable population.

### Author Contributions

ER and SS were the Principal Investigators on the project. ESR conceived of the current sub-analysis, led the data analysis, and led the writing of the manuscript. MR, KK and BDE were Co-Investigators on the project. JP, EV and CW assisted the study in data collection, literature review, and co-writing of the manuscript.

### ORCID iD

Erin Rogers  <https://orcid.org/0000-0002-3207-7956>

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