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Financial versus Health Motivation to Quit Smoking: A Randomized Field Study

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Abstract

Objective—Smoking is the most preventable cause of death, thus justifying efforts to effectively motivate quitting. We compared the effectiveness of financial versus health messages to motivate smoking cessation. Low-income individuals disproportionately smoke and, given their greater income constraints, we hypothesized that making financial costs of smoking more salient would encourage more smokers to try quitting. Further, we predicted financial messages would be stronger in financial settings where pecuniary constraints are most salient.

Methods—We conducted a field study in low-income areas of New Haven, Connecticut using brochures with separate health vs. financial messages to motivate smoking cessation. Displays were rotated among community settings—check-cashing, health clinics, and grocery stores. We randomized brochure displays with gain-framed cessation messages across locations.

Results—Our predictions were confirmed. Financial messages attracted significantly more attention than health messages, especially in financial settings.

Conclusions—These findings suggest greater emphasis on the financial gains to quitting and use of financial settings to provide cessation messages may be more effective in motivating quitting. Importantly, use of financial settings could open new, non-medical venues for encouraging cessation. Encouraging quitting could improve health, enhance spending power of low-income smokers, and reduce health disparities in both health and purchasing power.

Keywords

Smoking; smoking cessation; financial incentives; message framing; behavioral economics low-income; disparities

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Conflict of Interest

The authors declare there is no conflict of interest.

INTRODUCTION

Smoking is the leading, preventable cause of death. The harms of smoking fall disproportionately on individuals with low education and low income. This occurs both because 1) average smoking rates are disproportionately high among low-education and low-income populations (Stead et al., 2001; Flint & Novotny, 1997; Agrawal et al., 2008) and 2) smoking can be not only a health problem, but a financial drain for low-income individuals. Low-income smokers give up relatively greater proportions of other goods and services to buy cigarettes. A cigarette pack in 2012 can cost over \$8.23 in Connecticut and \$12.50 in New York City (Boonn, 2013; Hickey, 2012). For a pack-a-day smoker paying \$8.23 per pack, quitting could save over \$3,000 per year, money which could be used to buy other items Busch et al., 2004; Wang et al., 2006; Xin et al., 2009).

The combination of lack of access to cessation advice in the medical arena and the important financial aspects of smoking suggests that alternative venues for providing messages to motivate cessation and new ways to make the message more effective are needed. Specifically, we suggest that approaches to make the current and cumulative costs of tobacco salient might be effective for motivating low-income smokers to quit. In addition, providing the message about the financial costs of smoking in check-writing locations, banks, and even grocery stores, when smokers are concerned about their finances, might enhance the impact of the message. That is, location can 'prime' (to use a term from psychology) smokers to focus on their financial concerns and the costs of smoking which might enhance the effectiveness of a financial message to quit. More effectively encouraging quitting for low-income smokers would not only improve their health, but also enhance their spending power and reduce disparities in both health and purchasing power.

We hypothesized and tested that making the financial costs of smoking more salient would encourage more smokers to consider quitting; and that financial messages to quit would be more effective than health messages, especially for low-income individuals. Further, we hypothesized financial messages would be even stronger when financial constraints are most salient. Reasons include:

Greater immediacy and certainty of financial gain

Smokers, especially low-income smokers, may consider health benefits from quitting too distant and uncertain, i.e., they might, or might not, suffer from future tobacco-related disease. In contrast, financial savings from not purchasing cigarettes are immediate and certain.

Gains in purchasing power

Poorer individuals have more to gain in relative purchasing power from quitting than wealthier individuals. Spending over \$3,000 a year on tobacco can crowd-out spending on necessities for low-income individuals (Busch et al., 2004; Wang et al., 2006; Xin et al., 2009).

Evidence money motivates quitting

Empirical support that financial incentives encourages quitting comes from a variety of studies. Tobacco taxation studies show significant decline in purchases with higher tobacco taxes and prices (Chaloupka & Warner, 2000; Gallet & List, 2003). Contingency management and other studies show small financial payments can reduce smoking rates (Lussier et al., 2006; Volpp et al., 2006; Volpp et al., 2009; Sigmon & Patrick, 2012; Higgins, 2102). —Quit-and-Win|| contests have successfully used financial incentives to encourage quitting; smokers are eligible to win a monetary prize through lottery drawings if they promise to quit for a specified time, actually quit, and send in their entry form (Hahn et al., 2004; Hey & Perera, 2005; O'Connor et al., 2006). Finally, recent evidence suggests making opportunity costs of a choice more salient can change behavior (Frederick et al., 2009). While this evidence was tested in other domains, it may generalize to purchasing tobacco.

Heath risks well-known; financial impacts less emphasized

Through cigarette warning labels, public health announcements, and other approaches, smokers are continuously reminded of health risks (USDHHS, 2000). While health messages have been effective, low-income individuals still smoke at above average rates. Emphasis on financial costs of smoking has not been a major part of public messages and thus may have greater impact, especially on those with considerable financial constraints.

Findings from our randomized field study support our hypotheses and in turn suggest ways of expanding the provision and effectiveness of smoking cessation motivation.

METHODS

We conducted a 'message framing' field study among low-income populations in inner-city New Haven, CT between December 2008 and February 2009. To test the impact of financial versus health messages to motivate smoking cessation, we placed smoking cessation brochures with each message type in three types of settings: check-cashing stores, health clinics and grocery stores. The two message types were rotated across location types. We used location as the prime for receptivity to the message. Our primary outcome measure was how many brochures were picked-up by brochure and location type.

Message

We developed and rotated two sets of two brochures with both visual and written messages to motivate quitting: one set emphasized health impacts of quitting and one emphasized financial impacts. We used two sets of each type to enhance generalizability. Messages were gain-framed—the focus was on benefits of quitting rather than risks of not quitting. Gain-framed messages have been found more effective in reducing smoking (Toll et al., 2007; Toll et al., 2010; Rothman et al., 2006). Health brochures were titled —Quit Smoking and Get Healthy|| and financial brochures were titled —Quit Smoking and Save Money.|| Each had specific information on either heath or financial gains achievable over a day, week, and year.

We followed well-developed methods of message-framing to enhance validity (Toll, 2007; Toll, 2010; Rothman et al., 2006; Schneider et al., 2001). To ensure messages were salient for our target populations, we conducted five focus groups (in English and Spanish) to select the most compelling brochures. We also conducted qualitative tests to ensure the final sets were similarly professional, motivating, eye-catching, easy-to-understand, and of comparable impact (Wells & Windschitl, 1999). Our final brochures were similar in basic design, approach, colors, size, professional printing—except for focusing on either health or finance. Brochures were displayed in English and Spanish. The English versions are provided as supplementary materials.

Inside each brochure were: informed consent information, an opportunity to request a smoking cessation quitline call, and 'Quit-and-Win' contest information.

Sites and sample

Inner-city New Haven is divided into 'empowerment' zones, each having poverty rates of over 25%; higher-than-average smoking rates of 31%, compared to the national average of 20% (Community Alliance for Research and Engagement, 2009, unpublished); and populations with high rates of ethnic and racial minorities, primarily African-American and Hispanic. In each zone, we selected three sites to display brochures, one each: financial (check-cashing stores), health (clinics), and neutral (grocery stores). In grocery stores, people are concerned about both finances and health (e.g. nutrition). Check-cashing stores served as our financial sites; banks were generally not located in these zones. Thus, 12 sites in four zones were equally divided between check-cashing institutions, health clinics, and grocery stores. These 12 sites participated over the eight-week study period, yielding 96 week-site opportunities to collect data.

Randomization

We alternated displays of financial and health message brochures at each financial, health, and neutral site weekly with brochures displayed prominently to ensure greatest exposure to foot-traffic. Displays of message type were randomly assigned with full saturation of the options. That is, we randomized the two matching sets of health and financial messages across the 12 locations over eight weeks. During the eight weeks, each of the 12 sites had each of the four different visuals (two financial and two health) displayed twice, with each display period lasting one week. Randomization was used to ensure similar foot-traffic across message type, location type, and week. By rotating across messages and sites, we exposed populations similar in size and type to both health and financial messages.

Contest

We utilized a —Quit-and-Win|| lottery to encourage smokers to quit smoking and to obtain an additional data source. We placed contest information inside the brochures to prevent the contest from contaminating the exterior displayed message. Smokers who entered the contest and quit were eligible to win \$500 if their name was selected; a Breathalyzer CO test was used to confirm smoking cessation for winners.

Outcomes

The primary outcome was the number of brochures picked up by message type. When we replaced brochures weekly in each location (no sites ran out), we counted the number of brochures picked up the prior week by message type and site. This measure proxies for interest in the message, and likely interest in trying to quit. Similarly, picking up a financial message is indicative of greater interest in financial versus health motivation to quit, and vice versa.

We also recorded the number of brochures by message type sent in to participate in the Quit-and-Win lottery, which was our secondary measure.

RESULTS

Over the eight-week period across all locations, 1,487 brochures were picked up. Of these, 828 displayed financial messages and 659 displayed health messages. Financial message brochures were picked up more frequently overall—56% were financial, which is significantly different from the health selection rate ($p<.0001$) (see Table 1). This supports the hypothesis that the financial message was more compelling among this low-income population.

As predicted, financial brochures were even more likely to be picked up in financial locations (63%) compared to neutral (57%), or health (52%) locations (see Table 2). Differences between pickup rates of financial and health messages were significant across sites in comparison of financial versus health locations; and health versus neutral locations. However, there were no significant differences across neutral versus financial sites as both had high pickup rates for financial brochures. These results generally confirmed the expectation that the financial message would be most salient overall and selected most often in locations where the financial focus was most pertinent.

For our secondary outcome, the financial message, as compared to health, was submitted by more individuals to the Quit-and-Win contest as well, but the sample size (36) was too small to detect a significant difference. Only 2.5% and 2.2% of the financial and health brochures respectively were selected. The brochure complexity and length may have deterred individuals from submitting their contest applications. This complexity was due to IRB requirements, Quitline information needed, and information needed for awarding prizes.

DISCUSSION AND CONCLUSIONS

We found the financial message may generate greater interest in quitting than the health message, and the financial message may be even more powerful in financial settings. Importantly, financial gains are more immediate and certain compared to health gains. The financial motivation may be particularly strong for low-income populations. The financial motivation might be relatively more effective because current smokers tend to be disproportionately poorer and/or because it has been less emphasized. To the extent that the financial message is novel, its impact could diminish over time. Our findings suggest that the financial message to quit should be more central to policy efforts to motivate quitting.

Demonstrating that sites such as grocery stores and check-cashing facilities can be effective in stimulating interest in smokers to the gains from quitting, opens new avenues for delivering smoking cessation messages and may help reach neglected populations. Priming individuals about financial gains to quitting by delivering the message in financial-related outlets may make the message more effective and enhance motivation. Grocery stores, banks, check-cashing locations, tax preparation offices, and gas stations could each provide 'teachable moments'. For example, a grocery store visit in the financial tight period just before the next food stamp payment may provide a period of high-motivation to quit for financial reasons in low-income populations.

We add to the literature in several dimensions. To our knowledge, no other field study has compared the financial to health message in motivating smokers to quit. More generally, few, if any studies have focused on comparative effectiveness of financial versus health message in different types of settings. Further, our study used rigorous field study and message-framing methods to assess alternative frames of messages to motivate quitting. Importantly, we targeted inner-city, low-education, low-income, and minority populations (including Spanish-speaking). As smoking is increasingly confined to vulnerable populations our findings have important policy implications.

While we contend we have advanced the field in several dimensions, naturally our study has some weaknesses. First, we do not have direct data on how many people actually quit smoking; instead we use selection of the brochure as a proxy for interest in quitting. Unfortunately, there is no literature to on the relationship between demonstrating interest by taking a brochure and quitting. However, interest is a necessary step may serve as a proxy both motivation and action. Second, the results may not be generalizable across different geographic regions. Third, we are not able to determine how many individuals noticed the brochures at each site. More research is needed, but we believe the findings may open new opportunities to motivate smoking cessation.

Helping low-income individuals quit smoking is a strategy both for improving population health and for reducing the impact of poverty. Providing salient, effective financial messages to vulnerable populations may help address smoking, health, and, indirectly, income disparities. Savings from quitting are substantial, especially over a life-time and are important for low-income populations. Encouraging success in reducing smoking is timely given the current economic downturn and financial pressures on low-income individuals. Opening new venues, such as banks, for motivating smoking cessation is important given the tight time constraints in medical clinics; furthermore, the location can enhance the effectiveness of the smoking cessation message by priming smokers to focus on the financial gains.

Further research could determine how to optimally frame the financial messages, tailor them to specific populations, and test them in non-medical sites and on a broader scale. The messages could be developed for use in traditional venues such as public announcements, warning labels on packages of cigarettes, and phone-in quitlines to help smokers quit. Alternative delivery venues for the financial message could be used as well, such as a displaying the message at bus stops or putting brochures in grocery bags. With passive

delivery of the message, the effectiveness may be relatively low, but so would be the cost of reaching each smoker. Motivating cessation at peak times of the year when people are more concerned about their income (e.g., holidays, such as Christmas) might further enhance the costeffectiveness of such approaches. Further, the expectation of financial savings could be used to motivate smokers to 'invest' in smoking cessation products or counseling.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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HIGHLIGHTS

- We compared effectiveness of financial versus health smoking cessation messages.
- Messages were displayed in financial, health and neutral sites in low-income areas.
- Financial messages, especially in financial settings, attracted more attention.
- Findings suggest opportunities for new cessation outreach methods and venues.

TABLE 1

Number of brochures picked up and sent in by health and financial message type (Tests of significant differences by message type *)

MESSAGE TYPE	# PICKED UP	# SENT IN
Financial	828	21
Health	659	15
Total	1487	36
% Financial of total	56%	58%
Statistical level of test of difference: p-value *	.0001	.0524

Note that we compared the p-values using alternative methods and our results are robust across a set of alternatives.

* Two tailed tests, one sample proportion z-tests using as the null hypothesis an equal probability of financial and health message brochures being picked up (or sent in) are used.

TABLE 2

Number and type of health and financial message brochures picked up and sent in by location type (Tests of significant differences by message type ^{*})

	FINANCIAL: CHECK CASHING	HEALTH: CLINIC	NEUTRAL: GROCERIES
# Financial messages picked up	124	335	369
# Health messages picked up	74	313	272
Total picked up at site type	198	648	641
% Financial of total picked up	63%	52%	57%
Statistical level of test of difference: p-value :			
i) Difference financial vs. health messages <u>at each location</u> [*]	.0005	.0422	.0009
ii) Difference financial vs. health messages <u>across locations</u> ^{**}	Compare financial to: <ul style="list-style-type: none"> • health: .007 • neutral: insignificant at standard levels 	Compare health to <ul style="list-style-type: none"> • neutral: .034 • financial .007 	

Note that we compared the p-values using alternative methods and our results are robust across a set of alternatives.

^{*} Two tailed tests, one sample proportion z-tests using as the null hypothesis an equal probability of financial and health message brochures being picked up (or sent in) are used.

^{**} Two tailed, two population, Chi squared tests using as the null equal probability by message type.