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# Smoking-Related Stigma: A Public Health Tool Or A Damaging Force ?

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SMOKING-RELATED STIGMA: A PUBLIC HEALTH TOOL OR A  
DAMAGING FORCE?

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## **DEDICATION**

I dedicate this dissertation work to my family who has been loving and supportive though out this process.

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## ABSTRACT

Cigarette smoking is the leading cause of preventable death in the world. In an effort to address the tobacco epidemic, the World Health Organization's Framework Convention on Tobacco Control (FCTC) has formulated a number of policies that are thought to reduce cigarette consumption by making smoking socially unacceptable. It is possible that tobacco control policies that aim to make smoking socially unacceptable may also result in the stigmatization of smokers. Social factors such as social norms and socioeconomic status may also influence the development of smoking-related stigma. While some researchers suggest that smoking-related stigma may be an important public health tool to reduce smoking consumption and increase smoking cessation; there are no studies that have evaluated the relationship between smoking behavior and cessation and smoking-related stigma, using panel data. This dissertation used data from a population-based, longitudinal survey (2008-2012) of adult smokers in Mexico and Uruguay to evaluate three aims. First, we evaluated how social norms (i.e., close social network, friend number and societal norms) and socioeconomic status (SES) are associated with smoking-related stigma (i.e., feeling uncomfortable, perception of a negative stereotype of smokers and perception that smokers are marginalized). Second, we examined the relationship between exposure to tobacco control policy (i.e., perceived exposure to health warning labels and exposure to second hand smoking (SHS) in restaurants/cafes, enclosed workplaces and bars) and smoking-related stigma. For the first and second aim, we also investigated the role of nicotine dependence as an effect modifier on these

associations. Finally, in the third aim, we evaluated the association between smoking-related stigma and smoking behavior and smoking cessation. Results from the first aim suggest that strong anti-smoking injunctive norms (i.e., close social network and societal norms) were associated with higher levels of all indicators of perceived stigma in Mexico and Uruguay. Furthermore, we found that nicotine dependence modified the association between friend norms and stigma in Mexico and societal norms and stigma in Uruguay. In this study, we found that while Mexican smokers with lower education and lower income were less likely to be stigmatized (perceiving a negative stereotype), Uruguayan smokers with lower education and lower income were more likely to be stigmatized (perceiving a negative stereotype). Nicotine dependence was found to be an important effect modifier between SES and stigma in Uruguay. In the second aim, we found that perceived attention to HWLs on cigarette packages was positively associated with all aspects of smoking-related stigma in both Mexico and Uruguay. This study also suggests that while Mexican smokers exposed to SHS in enclosed working areas were more likely to feel stigmatized (feeling uncomfortable), Uruguayan smokers exposed to SHS in enclosed working areas were less likely to feel stigmatized (perceiving a negative stereotype) when compared to smokers not exposed to SHS. Finally, we found that Smoking-related stigma was associated with a higher likelihood of making a quit attempt, in both Mexico and Uruguay and quitting among Mexican participants. Smoking-related stigma (negative stereotype) was also associated with less relapse among Mexican respondents. Results from this dissertation suggest that factors that drive the social unacceptability of tobacco (i.e.; social norms and exposure to tobacco control policy) may also produce stigmatization among smokers. Future studies need to consider

smoking-related stigma when developing the next generation of tobacco control policies and programs that promote smoking cessation as, smoking-related stigma may be an important factor influencing smoking cessation.



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## CHAPTER 1 : INTRODUCTION

Cigarette smoking is the leading cause of preventable death in the world (1). In 2013, tobacco was responsible for the death of nearly 6 million people; the annual death toll attributed to tobacco consumption is expected to increase to 8 million by 2030 (2). Although initially cigarette consumption was concentrated mainly in high-income countries, in recent years the tobacco epidemic has shifted to low- and middle-income countries (LMICs) (2). Approximately 80% of smokers worldwide live in LMICs, making tobacco consumption a major public health concern (1). Yet cigarette smoking continues to increase in LMICs due to low prices, marketing and lack of awareness about its health effects (1). In an effort to address the tobacco epidemic, the World Health Organization's Framework Convention on Tobacco Control (FCTC) has formulated a number of policies that are thought to reduce cigarette consumption by making smoking socially unacceptable (3). Thus, it is possible that tobacco control policies that aim to make smoking socially unacceptable may also result in the stigmatization of smokers.

This dissertation will focus on the role of smoking-related stigma within the Latin American context. Studies suggest that smoking-related stigma may interact with factors, such as socioeconomic status (SES) (4, 5), social norms (5, 6), exposure to tobacco control policies (4, 7) and nicotine dependence (8, 9) to influence smoking behavior (Figure 1.1). For example, various studies have found that policy implementation (i.e., increases in cigarette taxes, smoke-free laws) has been used as a “denormalization”

Strategy to make smoking socially undesirable (10-13). Studies have found that tobacco control policies and other denormalization strategies (e.g., media campaigns) may reduce tobacco use by stigmatizing smoking (6, 12). While some researchers suggest that smoking-related stigma is associated with lower smoking prevalence and higher likelihood of quitting (12), concerns have been raised by many researchers regarding the use of stigma as a strategy to reduce smoking. For instance, Thompson et al. suggest that increasing stigmatization on those who continue to smoke may serve to reinforce rather than discourage smoking behavior (14).

The aim of this study is to understand how various factors, such as tobacco control policies and social factors, interact with smoking-related stigma to influence smoking behavior and cessation in Latin America (Mexico and Uruguay). A clear understanding of how these factors interact through different pathways to influence smoking behavior is important to develop the next generation of tobacco control policies and health programs that promote smoking cessation and reduce smoking initiation. Figure 1.1 highlights three main pathways, which will be the focus of this dissertation. In the first pathway (green line) I will evaluate how social norms and SES influence the development of smoking-related stigma. In the second aim (yellow line) I will evaluate the relationship between exposure to health warning labels (HWLs) and exposure to second-hand smoking (SHS) and smoking-related stigma. For Aim 1 and Aim 2 I will also study the influence of nicotine dependence as an effect modifier of these relationships. In the third and final aim of this dissertation (red line), I will study the association between smoking-related stigma and smoking behavior and cessation.



The primary study aims are:

- 1) To evaluate the influence of SES and social norms on smoking-related stigma in Mexico and Uruguay. Furthermore, we will investigate the role that nicotine dependence may have on these associations.

**Hypothesis 1a:** We expect that smoking-related stigma will be stronger among smokers with lower SES compared to smokers with higher SES.

**Hypothesis 1b:** We expect that stronger individual anti-smoking norms will result in higher levels of smoking-related stigma compare to weaker anti-smoking norms.

Furthermore, we expect that subjective anti-smoking social norms will have a greater influence on smoking-related stigma than descriptive social norms.

**Hypothesis 1c:** We expect that smokers with higher levels of nicotine dependence and stronger anti-smoking norms or lower SES will experience more stigma than their counterparts with lower levels of nicotine dependence and weaker anti-smoking norms or high SES.

- 2) To evaluate the relationship between exposure to tobacco control policy (i.e., reported exposure to SHS and perceived exposure to HWLs) and smoking-related stigma in Mexico and Uruguay. We will also investigate the role that nicotine dependence may have in these associations.

**Hypothesis 2a:** We expect that smoking-related stigma will be stronger among smokers who report less exposure to SHS compared to smokers who express more exposure to SHS.

**Hypothesis 2b:** We expect that smoking-related stigma will be stronger among smokers who perceive greater exposure to HWLs compared to smokers who express less exposure to HWL.

**Hypothesis 2c:** We expect that smokers with higher levels of nicotine dependence and greater exposure to SHS or higher levels of perceived attention to HWLs will experience more stigma than their counterparts, with lower levels of nicotine dependence and greater exposure to SHS or higher levels of perceived attention to HWLs.

- 3) To evaluate if smoking-related stigma will influence smoking behavior and smoking cessation in Mexico and Uruguay.

**Hypothesis 3a:** We expect that smoking-related stigma will result in an increase in smoking intensity among Mexican and Uruguayan smokers over time.

**Hypothesis 3b:** We expect that smoking-related stigma will result in a decrease in quit attempts and successful quitting of Mexican and Uruguayan smokers over time.

**Hypothesis 3c:** We expect that smoking-related stigma will result in a decrease in relapse among Mexican and Uruguayan smokers over time.

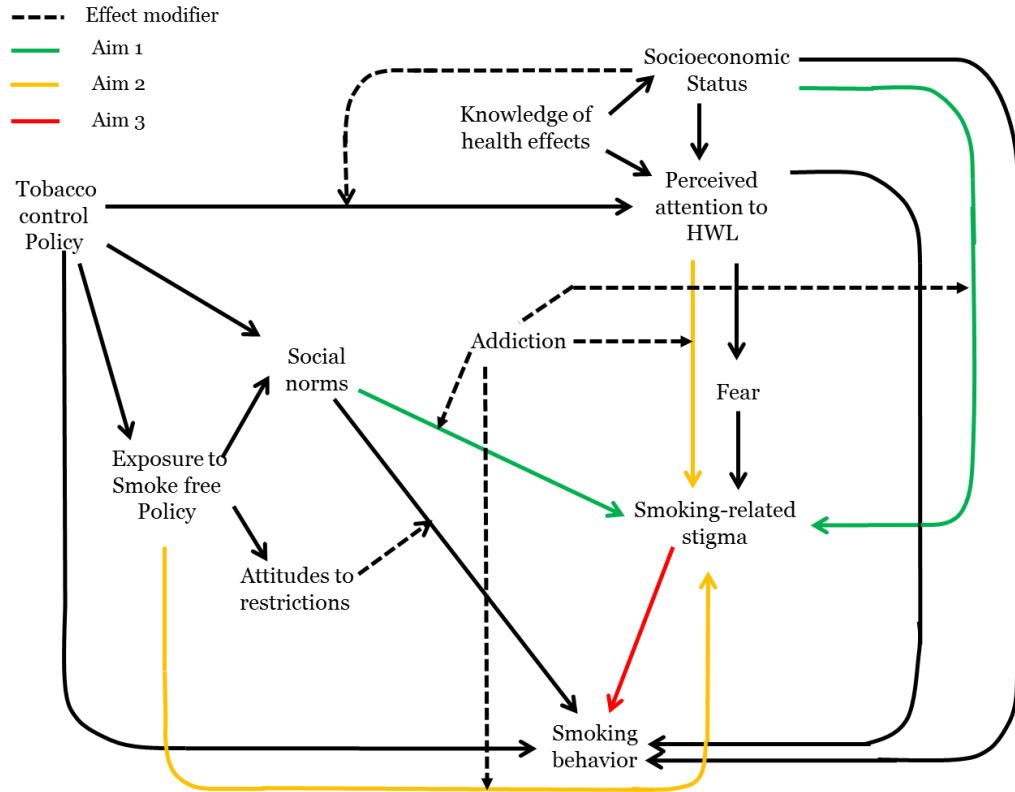


Figure 1.1 Conceptual model of social, psychological and environmental factors associated with smoking behavior.

## CHAPTER 2 : BACKGROUND

### Stigma

The study of stigma was initiated by Erving Goffman in the early 1960s. Goffman defined stigma as a relationship between an attribute and a stereotype (15). In other words, people distinguish an attribute that makes a person or group different from others, and if these differences challenge their normative expectations and beliefs, then this person becomes socially undesirable (15). Goffman describes three main types of stigma: stigma that arises from physical deformities, stigma that results from perceived faults or flaws (e.g., weak will, dishonest), and stigma that results from a membership to a particular community (e.g., racial or religious group).

Since Goffman's seminal essay on the topic of stigma there has been a considerable amount of work in this area. Researchers have analyzed different sources of stigma for chronic health conditions such as HIV/AIDS (16-18), mental illness (16, 19-22), epilepsy (23-25), obesity(26-28), disability(16) and cancer(29-31), as well as socially unacceptable behaviors such as drug addiction(32, 33) and prostitution (34). Many of these studies have found a negative impact of stigma on the lives of the stigmatized (35). Recently, studies performed on smoking-related stigma suggest that the stigmatization of smokers may contribute to an increase in discrimination (4, 14, 36) among smokers and health- related inequalities among disadvantaged smokers (14, 36). Furthermore, a study performed on disadvantaged smokers in New Zealand, found that smoking-related stigma may have counterproductive consequences for smokers, as it may

encourage them to socially withdraw from the non-smoking community (14). However, more studies are needed on this area to fully understand how stigma may influence the health of smokers, as well as smoking behavior.

Other researchers have focused on understanding the theory behind stigma by expanding on Goffman's previous work. For instance, in a manuscript published in 2004, Link and Phelan conceptualized stigma as the result of five components: 1) labeling, 2) negative stereotyping, 3) social distancing, 4) emotional reactions and, 5) status loss/discrimination that result when a group that lacks power deviates from the norm (19). In the first component, people distinguish and label smokers differently (37). In the second, people create a negative stereotype of smokers (4, 6, 14, 37). In the third component, smokers are linked to a distinct category, separating "us" from "them" (37, 38). The fourth component describes the feelings that a smoker may experience as the result of being stigmatized, such as guilt (6), shame (37, 39) or blame (37). In the fifth component smokers may experience discrimination and status loss in the form of social exclusion (6, 37, 40). Link and Phelan suggest that when a stigmatized group is labeled, set apart and linked to an undesirable characteristic, they may perceive that they are being devalued, rejected or excluded from society (19, 41).

This definition of stigma proposed by Link and Phelan (19, 35) has been used in numerous articles to describe the process of stigmatization in different areas such as mental illness (20, 22, 42), HIV and AIDS (17), and obesity (28). More recently, Link and Phelan's conceptualization of stigma has also been used to evaluate the development of smoking-related stigma on smokers (6, 43).

## Smoking-related stigma

Stigma is relative to time and space (15, 38, 44). For instance, during the 1940s and 1950s smoking was considered a desirable habit and was associated with a positive stereotype in the US (38). However, the social desirability of smoking started to decrease after studies on the negative effects of cigarette smoking started circulating (45). By the early 1960s, opinions about smoking had become less favorable in the US (38) and Europe (45). In the late 1970s, smoking had gone from being considered an unhealthy behavior, to being “an undesirable deviant behavior, and smokers as social misfits”(46) (p. 617): smoking had become a stigma. Furthermore, the implementation of tobacco control policies (e.g., smoke-free policies and HWLs) has decreased the social desirability of smoking in recent years (12) through social denormalization strategies. Hammond et. al. defined tobacco denormalization strategies as strategies that seek to change the social norms around cigarette smoking, thereby making tobacco use an undesirable practice (12). Hammond and colleagues concluded in their study that tobacco denormalization was independently associated with smoking cessation outcomes among a sample of smokers in the US, Canada, the United Kingdom and Australia. However, the use of tobacco denormalization as a strategy to reduce smoking prevalence has been a controversial topic in recent years, as it has been associated with the development of smoking-related stigma. As Bayer points out, it is important to ask: “Is it morally acceptable to embrace or foster stigmatization if in so doing we reduce the burdens of disease and premature mortality?” (47) (p. 468) In response to this question, some researchers have expressed concern that smoking stigmatization is not only unethical (6, 39), but they are also not convinced that stigma will lead to an increase in smoking

cessation (14, 39). Thus, the question remains: “Where is the evidence that inculcating a sense of spoiled identity is a good way to get people to adopt healthier behaviors?” (39) (p. 475).

To date, there has been very little published work performed on smoking-related stigma. Most of the work on this topic has consisted of qualitative studies, such as focus groups and open-ended interviews (6, 37). Although there have been few quantitative studies published in this area, one main complication regarding the use of quantitative methods to evaluate the presence of smoking-related stigma is the lack of a validated and reliable instrument to measure this construct (4). In the next section I will summarize the findings on this topic from both quantitative and qualitative studies, and describe the instruments that have been used to measure smoking-related stigma in these studies.

### **Findings on smoking-related stigma**

Results from qualitative and quantitative studies have consistently found that smoking-related stigma fits the definition proposed by Link and Phelan (19), who suggested that stigma consists of five elements: labeling, stereotyping, cognitive separation, emotional response, status loss and discrimination, and dependence of stigma on power (19).

Qualitative studies suggest that smokers are subjected to labelling and negative stereotype (4, 6, 14, 37), and that smokers perceive that non-smokers have labeled them as lepers (37), weak willed (4, 6), stupid (4, 6), uncivilized (14), and unclean (6, 14, 37). Quantitative studies on this area have found mixed results. A study conducted by Goldstein in the early 1990s in Canada found that smokers are indeed subjected to a

negative stereotype (38). However, a 2012 study in the Netherlands did not find evidence to suggest that smokers are negatively stereotyped because of their smoking (7).

Qualitative studies conducted among smokers also report that smokers perceive a sense of separation and segregation from non-smokers (4, 6, 14, 37, 40). For instance, a study among Scottish smokers suggested that once smoke-free policies were enacted, smokers felt segregated by the physical separation between smokers and non-smokers (37). Likewise, a quantitative study performed in Canada suggested that non-smokers preferred to be around non-smokers compared to smokers (38).

Qualitative studies that have evaluated the emotional response that results from smoking-related stigma have found that smokers expressed feelings of shame (37, 39), being blamed (37), guilt (6) and disapproval (6, 37). Another example of an emotional response to smoking-related stigma is represented in studies where smokers express feelings of discomfort related to smoking in public places, including places where smoke-free policies are not enforced (6, 14, 37). Discomfort to smoking in public places may result in social withdrawal by the smoker. For instance, a qualitative study suggests that one of the effects of stigmatization is that smokers no longer feel comfortable smoking in public settings and confine their smoking to private places where they would experience approval from other smokers in the group (40). Likewise, a quantitative study of smokers in New York City found that smokers who felt stigmatized were more likely to socially withdraw from their non-smoking peers and to keep their habit a secret (4). Emotional responses to smoking-related stigma have also been evaluated in smokers who have developed a smoking-related illness. For instance, smokers diagnosed with lung cancer have reported feeling blamed (43, 48), shame (43, 48-50), social insulation (49, 50),



anger (43), and regret (43). Smokers diagnosed with COPD have also expressed a feeling of self-blame and guilt (51).

Qualitative studies conducted among smokers also show that stigmatized smokers are likely to feel status loss and discrimination. A study performed among smokers in Canada found that smokers felt discriminated by non-smokers. For instance, one of the participants in this study expressed the following: “Even if you can’t articulate it you probably intuitively feel it in the same way that if you’re black or a woman and you’re being discriminated against, like even if you can’t articulate it or you certainly can’t prove it or you’d be at the Human Rights Commission, but you kind of know it’s happening.”(6) (p. 921). In another Canadian study, a participant expressed that she would never smoke publicly, as she feared being discriminated against by others (40). Furthermore, a qualitative study performed in New York City found that smokers who were stigmatized were more likely to report that they received differential treatment, such as being charged more for health insurance or denied coverage because of their smoking, being denied a job for which they were qualified, and reporting difficulty renting an apartment, compared to smokers who were not stigmatized (4). In a qualitative study performed among current smokers and ex-smokers in Scotland, there was very little discrimination reported (37). However, in this study, participants did report feeling a loss of social status in public places. For instance, some smokers perceived that non-smokers felt it legitimate to speak negatively about smokers, even in their presence (37).

Furthermore, participants in qualitative studies consistently report feeling powerless with regards to the implementation of smoke-free policies. For example, a study performed in Scotland suggests that smokers were aware of how tobacco control

policies served to control their smoking behavior, and how changes in social norms increasingly made smoking socially undesirable (37). Several of the participants reported a feeling of powerlessness as they had not been involved in the political processes around smoke-free policies. Likewise, a study performed in Vancouver, Canada, found that smokers perceived that smoke-free policies had gone too far in recent years, and had reached the point where they were neglecting smokers' rights (6).

The studies reviewed above consistently suggest that smoking-related stigma is a damaging force and that smokers are indeed labelled, stereotyped and experiencing emotional responses similar to the ones proposed by Link and Phelan (19). Furthermore, smoking-related stigma can produce a type of pejorative attitude where smokers feel that giving up smoking is too difficult (14). Therefore, the tendency to stigmatize smokers may result in a sense of helplessness for a smoker, thereby reinforcing continued smoking (14). It is possible that smokers with higher levels of nicotine dependence are more prone to stigmatization, as it may be harder for them to stop smoking even if they want to (8, 9). Researchers also emphasize the need to pay special attention to smokers in low SES, as the effects of stigmatization may be greater for low SES smokers, who experience both stigma related to smoking as well as the stigma associated with poverty (14, 40). As Thompson suggests in his paper: "The increasing stigmatization of those who continue to smoke, coupled with the spatial segregation of poor and minority populations, may compound to produce 'smoking islands' that may serve to reinforce rather than discourage continued smoking."(14) (p. 1)

## **Scales used to measure smoking-related stigma**

Most of the scales that have been used to measure smoking-related stigma, have been adapted from studies performed on the stigma of mental illnesses, where research has been extensive (19-21, 52). These studies have mainly focused on perceived stigma and internalized stigma. Perceived stigma has been defined as the negative appraisal smokers perceive from others (e.g., friends and family, medical providers and society in general) (43). Thus, perceived stigma is characterized by stigmatizing attitudes and behaviors non-smokers may express towards smokers (e.g., “smokers are weak willed”). Internalized stigma is defined as the internalization of perceived stigma and is characterized by feelings of self-blame, guilt, shame, anger and regret (e.g., “I am weak willed because I am a smoker”) (19, 43). Perceptions of stigma from others are later internalized by the individual (43).

Perceived smoking-related stigma has been measured in a number of studies by asking smokers their perception of others’ stigmatizing attitudes. For instance, in a study performed in the Netherlands, perceived stigmatization of smokers was measured by asking them what most people thought of smokers nowadays (7). Respondents were asked to indicate on a seven point Likert scale whether most people perceived smokers to be nice or not nice, strong or weak, free or not free, pathetic or not pathetic, and persevering versus not persevering. A similar study performed by Goldstein evaluated the stigmatization of smokers in Canada by asking participants (smokers and non-smokers) what they thought about three target groups: smokers, non-smokers and ex-smokers (38). Respondents rated these groups as: good/bad, considerate/inconsiderate, and attractive/unattractive. Also, in a study that evaluated smoking-related stigma among

smokers in New York City, the researchers measured perceived smoking-related stigma by asking smokers if they perceived that people looked down on them because they smoked (e.g., “Most people think less of a person because they smoke”). (4, 5).

Other studies have measured internalized stigma in their studies. For instance, a study among smokers in New York City measured internalized stigma by asking smokers if they had ever been subjected to differential treatment because of their smoking (e.g., has respondent had difficulty renting an apartment because they smoked) (4). Another study performed in the Netherlands measured internalized stigma by asking participants two statements: “You are ashamed if others see you smoking” and “You think that passers-by judge you negatively” (7). Brown-Johnson et al. created a scale to measure smoking-related stigma called the Internalized Stigma of Smoking Inventory (all measures of internalized stigma) (52). This measure was made up of three sub-scales: 1) self-stigma which resulted from the internalization of public stigma, 2) felt-stigma, which is characterized by feelings of devaluation or negative stereotype of smokers 3) and discrimination associated with smoking among stigmatized individuals (52). This scale was validated among 956 smokers with mental health diagnosed in the San Francisco Bay Area. Although, to date, this scale has not been used to evaluate the association between smoking-related stigma and smoking behavior and cessation, future studies may considered using this scale or other validated measures of smoking-related stigma to further advance research in this area.

### **Latin American context of smoking-related stigma**

There are currently no articles on smoking-related stigma in Latin America. However, in recent years there have been significant changes in tobacco control policies

in many Latin American countries. In particular, the rapid policy implementation in Mexico and Uruguay allows for an interesting natural experiment. Results from this study will be of interest to other countries that have rapidly adopted FCTC policies.

Furthermore, smoking-related stigma is an important area of research, as studies suggest that once smoke-free laws are implemented, smokers may start to feel stigmatized by non-smokers (5, 6). Additionally, studies in other countries have shown that smoking-related stigma can increase in marginalized and poor communities that may already be subjected to stigmatization (14). This is of particular relevance in Latin American countries where the marginalization and stigmatization of low SES groups is an ongoing issue (53). For instance, a qualitative study among youth who resided in poor neighborhoods in Mexico City, found that areas with high concentration of people with low SES may be associated with a series of stigmatizing factors (e.g., perceptions that poor neighborhoods are associated with gang violence). Furthermore, participants in this study perceived that society viewed them as lazy, violent, murderers and drug addicts because of the place where they lived (53). Another study performed in Mexico City found that people living in poverty, felt that society blamed them for their economic difficulties as they thought that the economic difficulties experienced by the poor was the result of their own laziness (54).

### **Smoking-related social norms**

Research that examines the social context of smoking suggests that smoking should not be viewed exclusively as an individual behavior, but should be recognized as a collective social practice (55). For instance, studies suggest that smokers find it difficult to quit when they are embedded in an environment where anti-smoking norms are weak

and smoking is socially acceptable (56). Studies that have investigated the influence of social norms on smoking behaviors have found that smoking-related norms are predictors of smoking behavior across a range of countries (57-60). These studies have generally evaluated two types of norms: descriptive norms, which refer to individual perceptions of what others do in a given situation, and injunctive norms, which refer to an individual's perception of what is normal or socially acceptable within a group (61-63). To date, most of the studies that have evaluated the association between social norms and smoking behavior have been conducted among adolescents. While studies conducted among adolescents are important in order to understand smoking initiation, the influence of social norms on adult smoking behavior is less well-studied. Thus, a clear understanding of how social norms influence smoking behavior and cessation is important. In the following sections I will describe the different types of questions that have been used in the literature to measure smoking norms. Furthermore, I will provide a summary of the studies that have evaluated the association between social norms and smoking behavior and cessation in adults. To evaluate how social norms have been measured in the literature, we conducted a literature search on the influence of social norms on smoking behavior and smoking cessation among adults. To find relevant literature, we searched Pubmed, ScienceDirect and Google Scholar for articles in English using the following search terms: social norms (including societal norms), subjective norms (including injunctive norms, perceived disapproval), descriptive norms (including descriptive quitting norms, peer prevalence, perceived prevalence), behavioral norms, social modeling, theory of planned behavior and social acceptability. In the articles evaluated we were able to recognize four main types of social norms: subjective norms, subjective

quitting norms, descriptive norms and descriptive quitting norms (Table 1). Within each subgroup social norms can also be classified as familial, partner, friend and societal norms, although some studies have used a combination of societal and family norms or friend and family norms (close social network norms) (Table 1 and Table 2).

Table 2 and Table 3 present a summary of studies that have evaluated the influence of descriptive and subjective social norms respectively, on smoking behavior and cessation among adults. As detailed on these tables, most studies have been performed in HICs with a few exceptions (e.g., China, Thailand and Malaysia). Most of the studies that have analyzed the influence of smoking norms (descriptive and subjective) on smoking behavior have used intention to quit as their main outcome. However, there are a few studies that have evaluated the association of smoking norms with current smoking, intention to smoke, quit attempts and smoking cessation. Results from these studies have found that smoking norms (both subjective and descriptive), consistently predict smoking behavior in the expected direction, such that strong anti-smoking norms are associated with a higher likelihood of intention to smoke, intention to quit, quit attempts and smoking cessation among adults, in HICs and LMICs. For instance, smokers may be more likely to smoke if they perceive that their close social network members smoke (descriptive norms) (64-66) or approve of their smoking (subjective norms) (65, 67). Likewise, smokers may be more likely to quit if they believe that people within their social network (e.g., family and friends) or society wants them to quit smoking (subjective quitting norms) (63, 68-70) or have quit smoking themselves (descriptive quitting norms) (63, 64, 68). Some studies reviewed showed a non-significant

association between smoking norms and smoking behavior; it is possible that these results could be explained by small sample sizes (63, 65, 69, 70).

It is also important to distinguish between subjective and descriptive norms, as they may yield different results with respect to smoking cessation (63). For instance, some researchers have found descriptive norms are a stronger predictor of smoking cessation than subjective norms (63, 68). In other words, smokers may be more concerned with what appears to be common or normal and less concerned with what they perceived to be approved or disapproved in terms of smoking behavior (68). However, in a study performed in the Netherlands, Van den Putte et. al. suggest that subjective norms may have a greater influence on quit intention than descriptive norms (64). Furthermore, a study performed among smokers in the US suggests that descriptive and subjective norms may interact in their prediction of smoking behavior (63). For instance, a person may perceive strong subjective norms that disapprove of smoking and at the same time perceive strong descriptive norms that approve of smoking. In this case, it is possible that there will be an interaction between subjective and descriptive norms that needs to be considered, as this interaction may attenuate the association between smoking norms (descriptive and subjective ) and smoking behavior (63).

### **Smoking-related social norms in Latin America**

To date, there is very little work on social norms and smoking behaviors among adults in Latin America. One study found that family smoking norms in Mexico and Uruguay were associated with the frequency of receiving anti-SHS verbal cues (71). Family social norms in Uruguay were also found to be associated with support for completely smoke-free workplaces, restaurants and bars (71). Another study evaluated



the influence of neighborhood subjective norms on smoking behavior among adults in Mexico. This study found that although more prevalent neighborhood anti-smoking norms were associated with less successful quitting, neighborhood social norms were not associated with smoking intensity, quit attempts or relapse. (72). In the same study, individual-level anti-smoking norms were not found to be associated with smoking intensity, quit attempt or relapse, but were positively associated with successful quitting (72). Another recent study conducted among Mexican smokers found that non-daily smokers with strong anti-smoking subjective norms were less likely to increase their smoking consumption by the follow-up period compared to non-daily smokers with weak anti-smoking subjective norms (73). However, descriptive social norms were not found to be associated with an increase in smoking consumption by the follow-up period. This study also found that neither descriptive nor subjective norms were associated with successful quitting among non-daily smokers (73). Moreover, this study found that among daily-light smokers, descriptive and subjective norms were not associated with successful quitting or an increase in cigarette consumption at the follow-up period (73). However, strong anti-smoking societal norms were associated with a decrease in smoking consumption by the follow-up period (73). Thus, it is possible that smoking norms may influence smoking behavior or be associated with other factors that have been found to influence smoking behavior, such as smoking-related stigma or tobacco control policies in Latin America.

## **Tobacco control policy**

### **Framework Convention on Tobacco Control**

There has been a worldwide movement advocating for stronger tobacco control policies since the 1960s; however, by the mid-1980s, there were only a few countries that had implemented tobacco control policies (74). In 1999 the WHO started working on the FCTC, which was the first global public health treaty, and was designed to reduce tobacco-related diseases and death around the world (75). In 2003, the FCTC was endorsed by member states (75) and to date, 168 countries have ratified the treaty (76). The objective of this convention is to protect present and future generations from adverse health, social, environmental and economic outcomes related to tobacco consumption (76). The FCTC covers a wide range of issues concerning measures related to the reduction of the demand and supply for tobacco (Figure 2.1) (75-77).

## **Tobacco control policy**

Scientific findings published widely in the 1980s about the dangers of SHS and the addictive properties of nicotine have motivated the implementation of smoke-free policies and other tobacco control laws (e.g., taxation, adoption of HWLs) worldwide (74, 78, 79). The specific policies implemented as well as the degree of enforcement vary by country (74). In the following paragraphs I will summarize findings from research on smoking behavior and cessation for two tobacco control policies that are recommended under the FCTC: smoke-free policies and HWL.

## **Smoke-free policy**

Smoke-free policies were initially developed and implemented to protect non-smokers from harms caused by SHS (79). The smoke-free movement started locally, but

after the adoption of the FCTC, it spread worldwide (78). Since the implementation of the FCTC, more than 60 countries have initiated campaigns for smoke-free laws (78) and to date, 28 countries have implemented comprehensive smoke-free policies that cover 100% of all non-hospitality work places, bars and restaurants (79). Comprehensive smoke-free laws have been defined by Article 8 of the FCTC treaty as policies that cover all indoor public spaces and workplaces that do not allowed for designated smoking areas (79). Although smoke-free laws have mainly been implemented in HICs, due to the growing body of evidence of the benefits of smoke-free environment, smoke-free policies have also started spreading to LMICs (79). For instance, in 2006 Uruguay became the first Latin American country to enforce a nationwide smoke-free policy (79). By 2011, seven countries had implemented smoke-free laws in Latin America, including Mexico in 2008 (80) and Argentina in 2011 (79, 81).

Despite scientific evidence that suggests that for smoke-free policies to be effective at reducing SHS levels, laws must be comprehensive (82), to date, much of the world's population is still not covered by 100% smoke-free regulations (78). For instance, a nationwide smoking-free policy was implemented in China in 2011; however, this policy is not comprehensive as there are no laws that currently restrict smoking in workplaces or restaurants and bars, which are common venues for SHS exposure (82). Likewise, it has been suggested that in countries such as Spain and Chile, comprehensive smoke-free laws have not been implemented due to the tobacco industry's interference with policy implementation (79).

Compliance with smoke-free laws has been higher in HICs compared to LMICs (71). However, smoke-free laws in LMICs have also been shown to be effective in

improving population health, especially where comprehensive smoke-free laws were implemented (83). For instance, in Uruguay, exposure to SHS decreased significantly in restaurants where comprehensive laws were implemented (83). Also, exposure to SHS in workplaces and bars remain far from complete, public health benefits were found (83). Likewise, a comprehensive smoke-free policy in Mexico City has been associated with lower exposure to SHS, compared to other cities in Mexico where smoke-free laws were not comprehensive (83).

In summary, comprehensive smoke-free laws have been found to be more effective than partial bans at reducing exposure to SHS (79). Although smoke-free policies were first introduced in HICs, at present, smoke-free policies are increasingly being implemented around the world (79). To date, smoke-free policies are currently focused on, bars, restaurants and workplaces and compliance has generally been high, although there are some exceptions (83). Compliance is less complete in LMICs, where bars and workplaces appear to pose particular challenges (83).

### **Health Warning Labels**

Despite the conclusive evidence of the harms associated with smoking, smokers have been found to underestimate the risks of tobacco consumption, including premature mortality (84), heart attacks, cancer and strokes (85). Studies also suggest that a smoker's knowledge of health risks from smoking is an important predictor for smoking cessation outcomes (86, 87). In this context, HWLs on cigarette packages were introduced as an important medium for communicating the negative health outcomes associated with tobacco consumption (3). International guidelines for HWLs on cigarette packages have been implemented under article 11 of the FCTC (3, 88). The FCTC stipulates that HWLs

on cigarette packages should include pictures and not cover less than 30% of the principal display area, and should preferably cover 50% or more (3, 88). FCTC's article 11 also recommends that HWLs should be periodically rotated to prevent "wearout" (where the HWLs are not effective over long periods of time) of the HWLs (89).

In 2001, Canada became the first country to adopt the use of pictorial HWLs; since then, 77 countries have implemented pictorial HWLs (90). In recent years, there has been significant progress in the implementation of HWLs worldwide, with more countries requiring pictorial HWLs and increasing HWLs size (90). To date, Thailand has the largest HWL package coverage in the world (85% of front, 90% of back), followed by Australia (75% of front, 90% of back) and Uruguay (80% of front, 80% of back) (90).

Research suggest that larger HWLs result in more awareness of the negative health effects of cigarettes among smokers (3). Thus, smokers are more likely to rate larger HWLs as having greater impact and often associate the size of the label with the magnitude of the risk (3). For instance, an experimental research study conducted in Canada found that an increase in the principal display area of HWLs in cigarette packages (from 50% to 75%, 90% and 100%), enhanced communication of the risk of smoking among adult smokers (3, 91). Likewise, a study performed in Uruguay found that after increasing the principal display area of HWLs (from 50% to 80%), smokers reported greater attention to HWLs (noticing and reading the HWLs closely) (92).

Studies have also found that pictorial HWLs are more likely to draw attention among smokers as compared to text HWLs (3). A study performed in Mexico found that pictorial HWLs were rated as more effective than text-only labels (93). This study also

found that pictorial HWLs were more likely to influence smokers with low education compared to smokers with high education (93). Likewise, a study performed among youth and adult smokers in the EU found that less educated respondents and blue collar workers were more likely to rate pictorial HWLs as effective (3). In conclusion, HWLs have been found to be more effective at communicating tobacco consumption health risk when they are larger in size and present pictures as opposed to text.

### **The Mexican context regarding tobacco control policy**

In April 2004, Mexico became the first country to ratify the FCTC treaty in Latin America (Figure 2.2). Soon after this, tobacco control policies (e.g., smoke-free policies, HWLs and tax increases) were implemented throughout the country. For instance, in June 2005, HWLs were required to cover 50% of the back of the cigarette packages (94). The text-only HWL included three HWLs on the back of the pack (“Smoking causes cancer and emphysema”, “Quitting smoking reduces important health risks”, and “Smoking during pregnancy increases risk of premature birth and low birth weight babies”) (88). Likewise, it was required for cigarette packages to display a text that read “currently there are no cigarettes that reduce health risks” (original text in Spanish) (94, 95).

However studies suggest that the text HWLs were very small, not bolded and not likely to create high levels of awareness among smokers (95). In September 2010, HWLs were required to cover 30% of the front and 100% of the side and back of the cigarette package. This first round of pictorial HWL compromised eight graphic images (e.g., a dead rat, a child dying from SHS), two of which were then selected by the Ministry of Health to be printed on cigarette packages every three months, making this the fastest

rotation of HWLs in the world (96). Figure 2.3 presents the HWLs on cigarette packages that have been displayed in Mexico since 2010.

Before the FCTC smoke-free policies were implemented in Mexico, there were only a few venues where smoking was regulated (i.e., government buildings and hospitals) (95). However, in April 2008, a comprehensive smoke-free law was passed in Mexico City, which prohibited smoking in work places, public transportation, restaurants and bars (80, 97). This resulted in a significant decline in SHS exposure within eight months (80). In May 2008, a federal law was signed that established smoke-free areas within public places and workplaces. Although the law was passed in May 2008, it was not put into effect until May 2009. Under this law, smoking was prohibited in workplaces, including hospitality venues, but was permitted in designated smoking areas as long as they had a separate ventilation system and were physically separated by walls (80). A study that compared the impact of the comprehensive smoke-free law passed in Mexico City with the Federal law issued in other three Mexican cities suggests that comprehensive smoke-free policies are more effective than partial smoke-free policies, as the decline in SHS exposure in bars, restaurants and cafes was greater for Mexico City compared to other cities in Mexico with partial smoke free policies (98).

### **The Uruguayan context regarding tobacco control policy**

Uruguay ratified the FCTC treaty in September of 2004 (92). Since then, this country has been a leader in tobacco policy implementation both in Latin America and around the world (99). In 2006, Uruguay was the first country in Latin America to issue a comprehensive smoke-free law in both enclosed public places and workplaces (Figure 2.4). To date, Uruguay's HWLs are amongst the largest in the world, and in 2010 they

became the first country to allow only one brand variety for each cigarette brand (i.e., only one type of Marlboro) (99).

In April 2006, Uruguay became the eighth country in the world to implement pictorial HWLs on cigarette packages (Round 1). The law at this time required that HWLs covered 50% of the front and back side of the package. In February 2008, a law was approved which required a change in the content of HWL (Round 2). Round 1 and Round 2 of HWLs consisted of symbolic images (e.g., cigarette as a tombstone or prison bars) (92). However, Round 3 of HWLs released in 2009 used more emotionally engaging graphic images, including images of gruesome diseased organs, death, and human suffering, as well as two abstract representations of poison (e.g., dead rat) and impotence. Figure 2.5 presents the HWLs on cigarette packages in Uruguay from 2010-2012. In December 2009, the Uruguayan government implemented a new policy which increased HWL size to 80% of the front and back of the package, which, at the time, was the largest HWL in the world (99). From 2006 to 2014, Uruguay has implemented seven rounds of pictorial HWLs (88, 99).

In 2010, the multinational tobacco company Philip Morris International (PMI) filed a complaint against Uruguay, claiming that some of their current tobacco control policies (i.e., HWL size increase and limiting brand variants to one per brand family) devalued their cigarette trademarks and investments in Uruguay (99). PMI's complaint had been anticipated as a strategy from the side of the tobacco industry to interfere with tobacco control policy making and implementation (99).



## Summary of background

Tobacco control policies such as HWLs and smoke-free policies may denormalize smoking by making it a socially undesirable habit (12). Furthermore, the implementation of tobacco control policies may influence smoking norms (83). The rapid implementation of tobacco control policies in Mexico and Uruguay allows for an interesting natural experiment, were it is possible to investigate how tobacco control policies and social factors (i.e., SES and social norms) interact to influence smoking related stigma. Results from this study will be of interest to other countries that are rapidly adopting FCTC policies.

Table 2.1 Social norms variables

<b>Social norm variable</b>	<b>Example of item wording</b>
Subjective norms	<p><b>Family:</b> "People who are important to you believe that you should not smoke."</p> <p><b>Partner:</b> "Do you think that your romantic partner would approve or disapprove of your smoking?"</p> <p><b>Friend:</b> "Most of my male friends oppose smoking"</p> <p><b>Society:</b> "Malaysian society disapproves of smoking"</p>
Subjective Quitting norms	<p><b>Family:</b> "Most people who are important to me think that I should quit smoking"</p> <p><b>Friend:</b> "Most of my friends wish I would quit smoking"</p> <p><b>Society:</b> "During the last 3 months, have people in your environment said that you should quit smoking?"</p>
Descriptive norms	<p><b>Family:</b> actual smoking by family members</p> <p><b>Partner:</b> "does your partner smoke"</p> <p><b>Friend:</b> "How many of your four closest friends smoke?"</p> <p><b>Society:</b> participants' subjective estimates of the prevalence of smoking in society</p>
Descriptive quitting norms	<p><b>Family:</b> "Most people who are important to me have quit smoking themselves"</p> <p><b>Friend:</b> "How many of the smokers who you regularly see has tried to quit smoking in the last 3 months?"</p> <p><b>Society:</b> participants' subjective estimates of the prevalence of smokers wanting to quit</p>

Table 2.2 Results of studies of descriptive social norms and smoking behavior among adults

References	Country	Sample size	Item wording	Response format	Social Referent	Dependent variable	Direction of association
(66)	US	1,279	"How many of your four closest friends smoke?"	0, 1, 2, 3, 4	Friends	Current smoking	Positive
(65)	China	315	1) "How many adults that I know smoke" 2) "How many of my male friends smoke" 3) "How many students on my campus smoke"	NW	Friends	Intention to smoke	Curvilinear
(63)	US	168	"Most people who are important to me have quit smoking themselves"	not at all true to exactly true	Family/ friends	Intention to quit	Positive
(63)	US	168	"does your partner smoke"	yes/no	Partner	Intention to quit	NS
(64)	Netherlands	2895	NW: They asked if their partners, friends, acquaintances, relatives, and colleagues smoked. They also asked how many of their children smoked.	5-point scale ranging from nobody to all.	Family/ friends/ partner	Intention to quit	Negative
(64)	Netherlands	2895	"How many of the smokers who you regularly see have tried to quit smoking in the last 3 months?"	5-point scale ranging from nobody to all.	Family/ friends	Intention to quit	positive
(68)	Norway	103	1) "A number of my friends/fellow students think of quitting smoking" 2) "A number of my friends/fellow students are about to quit smoking" 3) "A number of my friends/fellow students have quit smoking"	7-point Likert Scale, extent of agreement	Friends	Intention to quit	positive
(70)	Greece	94	NW: participants' subjective estimates of the prevalence of smoking and of smokers wanting to quit	NW	Society	Intention to quit	NS
(100)	US	252	NW: actual smoking by respondents' best friends, colleagues, and family members	7-point Likert scale	Family and friends	Smoking cessation	negative

NW: no wording; NS: not significant, (p-value>0.05)

Table 2.3 Results of studies of subjective social norms and smoking behavior among adults

References	Country	Sample size	Item wording	Response format	Social Referent	Dependent variable	Direction of association
(65)	China	316	1) "Most of my male friends oppose smoking" 2) "Most of my female friends oppose smoking"	5-point Likert scales ranging from strong disagreement' to strong agreement	Friends	Intention to smoke*	NS
(69)	Canada	346	"How strongly do you believe people who are important to you think you should not smoke cigarettes within the next 6 months?"	7 point scale (1-low and 7 -high influence of others to not smoke)	Family/ friend	Intention to smoke	NS
(63)	US	168	"Most people who are important to me think that I should quit smoking" and "Most people who are important to me want me to quit smoking"	not at all true to exactly true	Family/ friends	Intention to quit	positive
(64)	Netherlands	2895	NW: The respondents indicated the extent to which they thought people who are important to them would approve if they quit smoking within the next 3 months. 1) "People who are important for me, think I	5-point scale ranging from nobody to all.	Family/ friends	Intention to quit	positive
(68)	Norway	103	should quit smoking during the next 3-4 months" 2) "People who are important for me, wish that I quit smoking during the next 3-4 months"	7-point Likert Scale, extent of agreement	Family/ friends	Intention to quit	NS
(70)	Greece	93	"Most people who are important to me would want me to quit smoking in the next three months"	NW	Family/ friends	Intention to quit	positive
(67)	Thailand, Malaysia	4,006	"People who are important to you believe that you should not	a 5-point scale: (1) strongly disagree, to (5)	Family/ friends	Intention to quit	positive

			smoke.”	strongly agree			
(64)	Netherlands	2895	"During the last 3 months, have people in your environment said that you should quit smoking?"	A 5-point scale ranging from never to often	Society	Intention to quit	positive
(67)	Thailand, Malaysia	4,006	"Malaysian [or Thai] society disapproves of smoking"	a 5-point scale ranging from strongly disagree to strongly agree	Society	Intention to quit	positive
(10)	Scotland/ U.K.	1,014	(1"People who are important to me believe I should not smoke", (2 "Society disapproves of smoking", and (3 "There are fewer and fewer places where I feel comfortable smoking".	a 5-point Likert scale, ranging from strongly agree to strongly disagree	Family and Society	Intention to quit	negative
(101)	Taiwan	531	(1"How often did you perceive your family talked you out of smoking cigarettes?" (2 "asked you to stop smoking while talking to you?" (3 "nagged you when you smoked?" and (4 "refused to let you smoke in the house?"	5 point scale ranging from never to very often	Family	Intention to quit	positive
(102)	US	456	"Do you think most people who are important to you think you should or should not allow smoking in your home in the next 3 months?" (Referents: smokers who visit your family, smokers in your family, other parents you know, children in your household, and your spouse or partner)	3-point scale ranging from important others think I should allow smoking in my home to important others think I should not allow smoking in my home.	Family and friends	Intention to restrict home smoking	positive

NW: no wording; NS: not significant, (p-value>0.05)

## WHO FRAMEWORK CONVENTION ON TOBACCO CONTROL

### Measures related to the reduction of the demand for tobacco

- Tax and price measures to reduce demand for tobacco
- Promote and implement laws and policies that provide protection to exposure from environmental tobacco smoke
- Regulation and disclosure of the content in tobacco products
- Adopt and implement measures that require rotational HWLs on cigarette packages
- Promote and reinforce public awareness of tobacco control issues
- Adopt comprehensive laws and restrictions on tobacco advertising, promotion and sponsorship

### Measures related to the reduction of the supply for tobacco

- Adopt measures to restrict the sales of tobacco products to minors and distribution of free tobacco products
- Eliminate illicit trade of tobacco products
- Support for economically viable alternatives for tobacco growers

Figure 2.1 Major provisions of the FCTC  
Extracted from (75, 77)

# MEXICO

## Timeline of Tobacco Control Policies and ITC Surveys



33



Survey Mode: Face-to-Face (F2F)  
Respondent Types: Smoker

Figure 2.2 Timeline of the tobacco control policies implemented in Mexico and ITC surveys. Extracted from (103)



Figure 2.3 Examples of HWLs on cigarette packages in Mexico, from 2010- 2013  
 Extracted from (104)

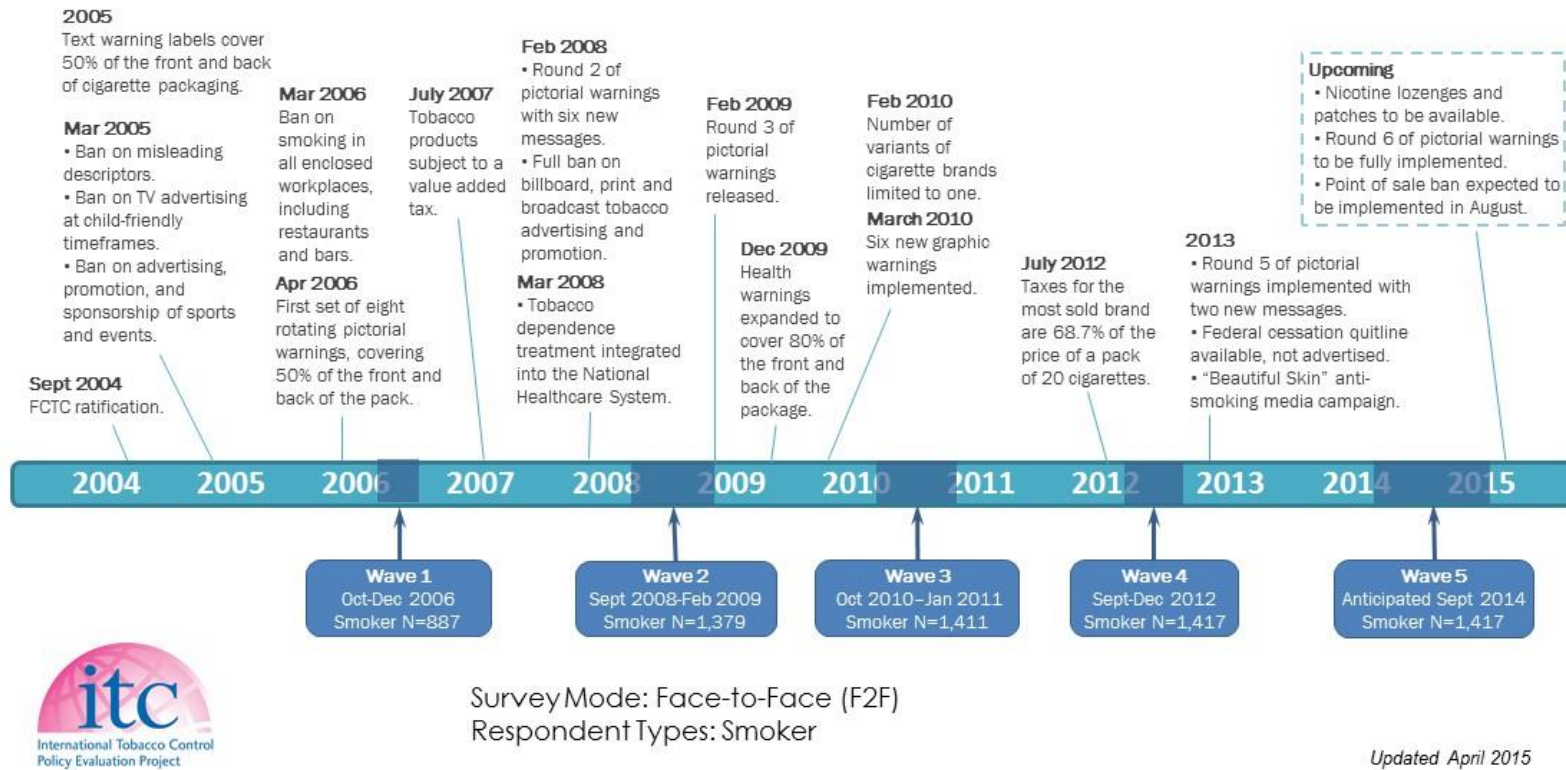


# URUGUAY

## Timeline of Tobacco Control Policies and ITC Surveys



35



47

Figure 2.4 Timeline of the tobacco control policies implemented in Mexico and ITC surveys. Extracted from (105)



Figure 2.5 Examples of HWLs on cigarette packages in Uruguay, from 2010- 2012  
 Extracted from (104)

## **CHAPTER 3 : THE ROLE OF SOCIAL NORMS AND SOCIOECONOMIC STATUS IN SMOKING-RELATED STIGMA AMONG SMOKERS IN MEXICO AND URUGUAY**

### **Introduction**

Tobacco control policies have been found to reduce the social acceptability of smoking (5, 71, 80, 106). Studies that have evaluated the impact of tobacco control policies on smoking behavior suggest that these policies may have laid the foundation for smoking “denormalization” by changing the social norms around tobacco use (6, 12, 106). One mechanism through which tobacco control policies and other “denormalization” strategies (e.g., media campaigns) may reduce tobacco use is by stigmatizing smoking (5, 6, 12, 106). However, studies suggest that increasing stigmatization on those who continue to smoke may serve to reinforce rather than discourage smoking behavior (14, 36).

Stigma has been strongly associated with normative beliefs, as undesirable behaviors are stigmatized in order to identify boundaries of what is acceptable and unacceptable within a given society (106). Goffman defined stigma as the perceived relationship between a personal attribute and a undesirable stereotype (15). However, only attributes that challenge normative expectations of how an individual should be are expected to result in undesirable stereotypes (107). Expanding on Goffman’s work, Link and Phelan conceptualized stigma as the 1) labelling, 2) negative stereotypes, 3) social distancing, 4) emotional reactions, and 5) status loss or discrimination that result when a group that

lacks power deviates from the norm (19). Although this conceptualization has mostly been used to describe as communicable health conditions such as HIV/AIDS (16-18) and mental illness (16, 19-22), results from previous studies have found that smoking-related stigma can be conceptualized using the five components proposed by Link and Phelan (19). With regard to the first component, people are posited to distinguish and label smokers from non-smokers (37). In the second, people create a negative stereotype of smokers (4, 6, 14, 37). In the third component, smokers are perceived as belonging to a distinct category, separating “us” from “them” (37, 38). The fourth component describes the feelings that a smoker may experience as the result of being stigmatized, such as guilt (6), shame (37, 39) or blame (37). The fifth component posits that smokers may experience discrimination and status loss in the form of social exclusion (6, 37, 40). Link and Phelan suggest that when a stigmatized group is labeled, set apart and linked to an undesirable characteristic, they may perceive that they are being devalued, rejected or excluded from society (19, 41).

Although previous qualitative (6, 37) and quantitative (4) studies suggest that smoking-related stigma may be a damaging force, few studies have evaluated the factors that may increase or decrease stigma formation among smokers. Previous studies suggest that social factors such as socioeconomic status (SES) and social norms may influence the development of smoking-related stigma. For instance, a study conducted among smokers in New York City found that although subjective smoking norms (i.e., family and friends disapproval of smoking) were associated with stigma, descriptive smoking norms (i.e., number of family and friends who smoke) were not (5). Efforts to evaluate the relationship between SES and smoking-related stigma have provided inconsistent

results. For instance, the same study of smokers in New York City found that high education was positively associated with smoking-related stigma (5). However, a second study (also conducted among smokers in New York City) found that low education was associated with higher levels of smoking-related stigma compared to smokers with high education (4). To the best of our knowledge, no study has evaluated the factors responsible for the formation of smoking-related stigma in Latin America. In this study, we aim to evaluate how anti-smoking norms and SES are associated with stigma among smokers in Mexico and Uruguay. We expect that strong anti-smoking norms will be associated with smoking-related stigma. Furthermore, studies suggest that people who suffer from addiction are prone to stigmatization (8, 9). Therefore, we also investigate the role of nicotine dependence as an effect modifier. We expect that smokers with higher levels of nicotine dependence and stronger anti-smoking norms or lower SES will experience more stigma than their counterparts.

## **Methods**

### **Population**

We analyzed data from the Mexico and Uruguay survey administrations of the International Tobacco Control Policy Evaluation (ITC) Project. The ITC Mexico and ITC Uruguay samples both involved a population-based, longitudinal survey of adult smokers in selected cities. Data collection started in both countries in 2006, and used a stratified, multi-stage sampling scheme with face-to-face interviews. Census tracts were selected from 7 Mexican cities and 5 cities in Uruguay, with probability proportional to the number of households. Two blocks groups were selected from the census tracts with

selection proportional to the number of residents. Households were randomly selected and visited to enumerate household members and recruit eligible participants.

In both countries, eligible participants were adults (18 years or older) who had smoked more than 100 cigarettes in their lifetime. Quotas were set for smokers per block, and if this number was not reached another block was selected at random in order to recruit new participants. The same participants were followed from wave to wave; however, due to loss to follow-up, the sample was replenished each year with smokers from the originally selected or adjacent census tracts. The data used from ITC Mexico in this study came from Wave 3 (conducted from November-December 2008), Wave 4 (conducted from January- February 2010), Wave 5 (conducted from April-May 2011), and Wave 6 (conducted from October-December 2012). The data from ITC Uruguay used in this study came from Wave 2 (conducted from September 2008-February 2009), Wave 3 (conducted from October 2010- January 2011), and Wave 4 (conducted from September-December 2012).

The Mexican sample in this study (Wave 3 to 6) consisted of 8388 observations. We excluded all observations who had quit smoking at each wave (n=1183) and observations who had missing values for key variables analyzed in this study (n=535). Therefore the final sample size for the Mexican sample was of 6670 observations. Likewise, the initial Uruguayan sample consisted of 4221 observations (Wave 2 to 4). After excluding people who were quit at each wave (n=528) and observations with missing values for key variables analyzed in this study (n=397), our study sample size consisted of 3296 observations.

The questions and responses to this survey were performed in Spanish and were later translated to English by ITC project personnel.

### **Smoking-related stigma measures**

Currently there is not a consistent and reliable instrument to measure smoking-related stigma in Latin America. In 2015, Brown-Johnson et al. created a scale to measure smoking-related stigma called the Internalized Stigma Of Smoking Inventory (ISSI) (52). This scale measured different aspects of internalized stigma only (e.g., “I feel inferior to others who are not smokers”) as opposed to measure of perceived stigma (e.g., “Society believe that smokers are inferior”). Although, we were limited to measures of perceived stigma in our study, we evaluated similar aspects of smoking-related stigma considered in the ISSI (i.e., negative stereotype of smokers and status loss/discrimination). In this study, we used three questions to measure smoking-related stigma that best fit Link and Phelan’s conceptualization of stigma (19, 41). Three different aspects of smoking-related stigma were measured in this study: emotional reactions, negative stereotype of smokers, and status loss. To measure respondents’ emotional reactions, participants were asked how strongly they agreed that “There are fewer and fewer places where you feel comfortable smoking” (feeling uncomfortable). Negative stereotype of smokers was measured by asking participants how strongly they agreed that “Any negative impact that smoking causes is the smokers' fault” (negative stereotypes of smokers). Furthermore, status loss was measured by asking respondents how strongly they agreed that “People who smoke are more and more marginalized” (perception that smokers are marginalized). Responses to these questions included: “Strongly disagree”, “Disagree”, “Neither agree nor disagree”, “Agree” and “Strongly

Agree”. We dichotomized the responses into “stigmatized” (agreed or strongly agreed) and “not stigmatized” (other responses). Responses were treated independently, as the internal consistency for these three measures combined was very low ( $\alpha=0.3$ ). In addition, a sensitivity analysis was performed where stigma was treated as a three-level categorical variable (where 1=stigmatized, 2=neutral, and 3=not stigmatized).

### **Social norms**

Three types of norms were analyzed: close social network norms, friend norms and societal norms. Close social network norms and societal norms correspond to injunctive norms. Injunctive norms refer to an individual’s perception of what is normal or socially acceptable within a group (61-63). Friend norms correspond to descriptive norms, which refer to individual perceptions of what others do in a given situation (61-63). Close social network norms were measured by asking residents how strongly they agreed (on a five point scale) that: “People who are important to you believe that you should not smoke.” Societal norms were measured by asking respondents how strongly they agreed (on a five point scale) that: “The Mexican/Uruguayan society disapproves of smoking.” Responses to these questions (i.e., close social network norms and societal norms) included: “Strongly disagree”, “Disagree”, “Neither agree nor disagree”, “Agree” and “Strongly Agree”. We categorized these questions into three-level variables (1= strongly agree, 2=agree and 3= neutral or disagree). The question used to measure friend norms asked respondents: “Of your five closest friends or acquaintances that you spend time with on a regular basis, how many of them are smokers (0, 1, 2, 3, 4, or 5)?” This question was treated as continuous variable. All social norm variables were measured at the wave corresponding to the dependent variable.



## **Socioeconomic status**

Education and monthly income were used to measure socioeconomic status (SES). Education was categorized as primary education or less, middle school, vocational school/ high school/ incomplete university, and university/ post-graduate in both countries. In Mexico and Uruguay, we collapsed income categories to divide the data into approximate quartiles. Participants who responded “Don’t know” to this question were grouped into a fifth category. Previous studies suggest that including an extra category for individuals with missing data can produce biased results, and instead a complete case analysis of the data is recommended (108, 109). Thus, a sensitivity analysis was conducted where we excluded the subjects with missing data for income. All SES variables were measured at the wave corresponding to the dependent variable.

## **Nicotine dependence**

Nicotine dependence in Uruguay was assessed using the Heaviness of Smoking Index (HSI), which has been shown to be positively associated with nicotine dependence (110). HSI was estimated by summing two categorized measures: number of cigarettes per day (CPD) and time to first cigarette (TTFC) (111). CPD was categorized as follows: 0: 1–10 CPD; 1: 11–20 CPD; 2: 21–30 CPD; and 3: 31+ CPD. TTFC was coded as 0: 61+ min; 1: 31–60 min; 2: 6–30 min; and 3:  $\leq 5$  min(111). When these two measures are summed they give a scale that ranges between zero and six. Additionally a daily smoking status variable (1=smoke every day, 0=smoke less than every day) was also used as a control variable in Uruguay. The HSI was not a good measure of nicotine dependence in Mexico, as most Mexican smokers are categorized at very low levels (0 on a scale of 0 to 6) due to the low intensity smoking patterns in the country (112). Therefore, in Mexico

we used a measure of CPD that was categorized as follows: 1=non-daily, 2=less than 5 cigarettes per day, 3=5 to 10 cigarettes per day, and 4=more than 10 cigarettes per day. A previous study suggest that this measure shows evidence of predictive validity when assessing downstream cessation (112). Nicotine dependence was measured at the wave corresponding to the dependent variable.

### **Covariates**

The covariates we assessed as potential confounders were age, sex and SES (when SES was not the main exposure variable). Age was treated as a continuous variable, and sex was dichotomized. Income and education were included as covariates in the social norms/stigma models. In the analysis, we also included a time indicator variable corresponding to each wave in the sample. All covariates were measured at the wave corresponding to the dependent variable.

### **Statistical Analysis**

We calculated weighted descriptive statistics for all variables of interest and for all survey years in Mexico and Uruguay. Generalized estimating equations (GEE) with log-binomial models were used to account for correlations in the outcomes over time within individuals (113). Log-binomial marginal models were used to estimate the risk ratio (RR). RRs were calculated rather than risk ratios (ORs) because the risk of all outcome measures in this study was higher than 10%, and ORs may overestimate the risk ratio beyond this level. We ran three sets of GEE models for each aspect of smoking-related stigma (i.e., negative stereotype of smokers, feeling uncomfortable, and perception that smokers are marginalized). In the first set of models, we examined the crude association between the social factor (i.e., education, income, close social network

norms, societal norms and friend norms) and smoking-related stigma. In the second set of models, we evaluated the influence of these social factors and smoking-related stigma after adjusting for individual-level covariates, including nicotine dependence. The third set of models examined the interaction between each of these social factors and nicotine dependence, after adjusting for individual-level covariates. When the interaction term was statistically significant (at the  $\alpha=0.05$  level), we calculated the predicted probabilities for various levels (10th, 25th, 50th, 75th, 90th percentiles) of the social factors and nicotine dependence to graphically display the interaction.

It is possible that longer amounts of time may be required for strong anti-smoking norms to influence the development of stigma. Therefore, in a sensitivity analysis we used a lagged variable to evaluate smoking-related stigma at time  $(t+1)$  as a function of smoking norms at time  $(t)$ . We also used a lagged variable to evaluate smoking-related stigma at time  $(t+1)$  as a function of income at time  $(t)$ , as income could vary among participants over survey waves. Since we did not consider that education would change significantly from year to year, a comparable sensitivity analysis was not conducted for education.

All models were weighted to account for the sampling design and rescaled to the sample size at the city level to keep the observations from the largest cities from overwhelming over-representing those in smaller cities. GEE models were run in SAS 9.4.

## Results

Table 3.1 presents the sample characteristics by country and year. The mean age ranged between 39 and 43 in both samples. In Uruguay, the proportion of male and

female participants was equally distributed; however, in Mexico, participants were more likely to be male (62-63%) than female. In both countries, less than 20% of participants had a college education. More than half of Mexican and Uruguayan respondents at each wave felt uncomfortable about smoking, and 78-86% of respondents in Mexico and more than 90% of respondents in Uruguay perceived a negative stereotype of smokers.

However, less than half of the respondents in both countries felt that smokers were being marginalized. In terms of anti-smoking social norms, more than 80% of smokers agreed or strongly agreed that society disapproved of smoking in both countries. Likewise, more than 70% of smokers in Mexico and more than 65% of smokers in Uruguay agreed or strongly agreed that people who cared about them wanted them to stop smoking. The mean number of smoking friends per participants was approximately three friends in both countries. In Mexico, around 30% of participants were non-daily smokers; in Uruguay 90% of participants were daily smokers.

Tables 3.2-3.4 present risk ratios for the association between social norms (i.e., close social network, societal norms and friend norms) and feeling uncomfortable about smoking. In both unadjusted and adjusted models, participants in Mexico and Uruguay who reported stronger close social network norms against smoking were more likely to feel uncomfortable about their smoking (Table 3.2 results for strongly agree vs. disagree/neutral; Mexico: RR=3.15, 95% CI 2.61–3.86; Uruguay: RR=2.48, 95% CI 1.78–3.46). Similarly, smokers in both countries who reported stronger societal norms against smoking were more likely to feel uncomfortable about their smoking (Table 3.3 results for strongly agree; Mexico RR=6.46, 95% CI 5–8.35; Uruguay RR=4.62, 95% CI 3.08–6.92). The relationship between close social network norms and societal norms and

stigma (feeling uncomfortable) followed a dose response pattern in Mexico where smokers with stronger anti-smoking norms were more likely to feel uncomfortable about smoking. In Uruguay, this dose response pattern was observed only for societal norms and stigma (feeling uncomfortable). Descriptive friend norms were not significantly associated with smoking-related stigma (feeling uncomfortable) in Mexico. However, Uruguayan smokers with more smoking friends were less likely to feel uncomfortable about their smoking (RR=0.93, 95% CI 0.87–1.00).

Tables 3.5- 3.7 present risk ratios for the association between social norms and perceiving a negative stereotype of smokers. Smokers with stronger close social network norms against smoking in Mexico and Uruguay were more likely to perceive a negative stereotype of smokers (Table 3.5 results for strongly agree vs. disagree/neutral; Mexico: RR=3.78, 95% CI 3.00–4.77; Uruguay: RR=2.35, 95% CI 1.25–4.42). Respondents who perceived stronger anti-smoking societal norms were also more likely to perceive a negative stereotype of smokers in Mexico and Uruguay (Table 3.6 results for strongly agree; Mexico: RR=2.69, 95% CI 2.05–3.54; Uruguay: RR=4.16, 95% CI 2.07–8.36). In both countries, smokers with more smoking friends were less likely to perceive a negative stereotype of smokers compared to smokers with less smoking friends.

However, these associations were not statistically significant.

Tables 3.8- 3.10 present risk ratios for the association between social norms and perceiving that smokers were marginalized. Smokers with stronger close social network norms against smoking in Mexico and Uruguay were more likely to perceive that smokers were marginalized (Table 3.8 results for strongly agree vs. disagree/neutral; Mexico: RR=2.09, 95% CI 1.72–2.52; Uruguay: RR=1.79, 95% CI 1.27–2.53). Likewise,

smokers who perceived stronger societal anti-smoking norms in Mexico and Uruguay were also more likely to perceive that smokers were marginalized (Table 3.9 results for strongly agree; Mexico: RR=5.36, 95% CI 4.28–6.71; Uruguay: RR=4.87, 95% CI 3.43–6.92). In Uruguay, participants who had more smoking friends were less likely to feel that smokers were marginalized (Table 3.10 results for strongly agree; RR=0.93, 95% CI 0.87–0.99). These results were not statistically significant in Mexico.

Table 3.11 and Table 3.12 present risk ratios for the association between SES (i.e., education and income) and feeling uncomfortable about smoking. Education and income were not significantly associated with feeling uncomfortable about smoking in either country (Table 3.11 and Table 3.12).

Table 3.13 and Table 3.14 present risk ratios for the association between SES (i.e., education and income) and perceiving a negative stereotype of smokers. Mexican participants with lower education (RR=0.64, 95% CI 0.47–0.86 for primary education or less versus university graduate) and lower income (RR=0.75, 95% CI 0.58–0.97 for first versus fourth quartiles) were less likely to perceive a negative stereotype of smokers than their more affluent counterparts (Table 3.13 and Table 3.14). However, Uruguayan smokers with lower education (RR=3.25, 95% CI 1.55–6.8 for primary education or less versus university graduate) and lower income (RR=1.61, 95% CI 0.77–3.36 for first versus fourth quartiles) were more likely to perceive a negative stereotype of smokers. In both countries, smokers with lower education and lower income were more likely to report that smokers were marginalized, although the associations were not statistically significant (Tables 3.15 and Table 3.16).

Figure 3.1A and Figure 3.1B presents the results from the investigation of effect modification by nicotine dependence on the social norms and smoking-related stigma associations. Nicotine dependence did not modify the association between close social network norms and any of the three aspects of smoking-related stigma (i.e., feeling uncomfortable, perceiving a negative stereotype of smokers and perceiving that smokers are marginalized) in either country. Furthermore, nicotine dependence did not modify the association between number of smoking friends and stigma in Uruguay, nor societal norms and stigma in Mexico. Nicotine dependence did, however, modify the association between friend norms and feeling uncomfortable about smoking in Mexico, such that smokers with fewer smoking friends and higher levels of nicotine dependence were more likely to feel stigmatized (feeling uncomfortable) compared to smokers with fewer smoking friends but lower levels of nicotine dependence (Figure 3.1A;  $p$ -value=0.0115). Nicotine dependence also modified the association between societal anti-smoking norms and perceiving a negative stereotype towards smokers in Uruguay, such that smokers who perceived weaker anti-smoking societal norms and had higher levels of nicotine dependence were more likely to perceive a negative stereotype of smokers, compared to smokers who perceived weaker anti-smoking norms and had lower nicotine dependence (Figure 3.1B;  $p$ -value=0.0291).

Figure 3.1C and Figure 3.1D presents the results for effect modification by nicotine dependence on the SES/ smoking-related stigma relationships. Nicotine dependence did not modify the association between either education or income and any of the three stigma measures (i.e., feeling uncomfortable, perceiving a negative stereotype of smokers and perceiving that smokers are marginalized) in Mexico, and did

not modify the association between education or income and two stigma measures in Uruguay. However, nicotine dependence modified the association between education and marginalization of smokers in Uruguay, such that smokers with higher education and higher nicotine dependence were more likely to perceive that smokers were marginalized compared to smokers with higher education and lower nicotine dependence (Figure 3.1C;  $p$ -value=0.0179). Likewise, smokers with higher income and higher nicotine dependence in Uruguay were more likely to perceive that smokers were marginalized compared to smokers with higher income and lower nicotine dependence (Figure 3.1D;  $p$ -value=0.0041).

In a sensitivity analysis, we used a lagged variable for all social norms evaluated (i.e., close social network norms, friend norms and societal norms) and income, to evaluate smoking-related stigma at time  $(t+1)$  as a function of these exposure variables at time  $(t)$  (previous survey wave). Results from this analysis showed that the direction of the association was consistent in the models with the exposure variables lagged and in the models where they were not lagged (Appendix A; Table A.1-A12). Additionally, we conducted a sensitivity analysis where stigma was treated as a three level categorical variable (where 1= stigmatized, 2=neutral, and 3=not stigmatized). Results from this sensitivity analysis showed no qualitative differences between the models that compared “stigmatized” and “not stigmatized” from our main analysis. Moreover, we found no statistically significant differences in the models that compared “neutral” to “not stigmatized” (Appendix A; Table A.13-A27).



## Discussion

In this study, we used data from population-based, longitudinal surveys of adult smokers in Mexico and Uruguay to evaluate how norms against smoking and SES were associated with stigma among smokers. We also investigated the role that nicotine dependence may have on these associations. Our results indicate that strong anti-smoking injunctive norms (i.e., close social network and societal norms) were associated with higher levels of all indicators of perceived stigma in Mexico and Uruguay. In most cases, descriptive norms were not significantly associated with any of the three aspects of smoking-related stigma. However, Uruguayan smokers with more smoking friends were less likely to perceive that smokers were marginalized. Furthermore, we found that Uruguayan smokers who perceived weaker anti-smoking societal norms and had higher levels of nicotine dependence were more likely to feel stigmatized (negative stereotype of smokers), compared to smokers who perceived weaker anti-smoking norms and had low nicotine dependence. We also found that Mexican smokers with fewer smoking friends and higher levels of nicotine dependence were more likely to feel stigmatized (feeling uncomfortable) compared to smokers with fewer smoking friends and lower levels of nicotine dependence.

The association between SES and smoking-related stigma provided an interesting contrast between countries. While Mexican smokers with lower education and lower income were less likely to perceive a negative stereotype of smokers, Uruguayan smokers with lower education and lower income were more likely to perceive a negative stereotype of smokers. In addition, although nicotine dependence did not appear to modify the association between SES and smoking-related stigma in Mexico, nicotine

dependence was found to be an important effect modifier in the association between SES and stigma in Uruguay. Uruguayan smokers with high income or high education and high nicotine dependence were more likely to perceive that smokers were marginalized compared to those with high income or high education and low nicotine dependence.

Our results are consistent with a study of smokers in New York City, which found that strong injunctive anti-smoking norms (i.e., “How do most of your close friends or family feel about cigarette smoking among adults?”) were related to higher smoking-related stigma, while descriptive norms (i.e., “How many of your close friends or family would you say smoke cigarettes?”) were not associated with stigma (5). In this study, Stuber et al. suggested that injunctive norms may be more important at predicting smoking-related stigma compared to descriptive norms, as injunctive norms rely on others’ normative beliefs, while descriptive norms are formulated based on others’ behavior (5). Furthermore, injunctive norms may be strong predictors of smoking-related stigma, considering that stigmatization develops due to devaluation and exclusion from a group (5, 107). This devaluation and exclusion could very well result from a group’s normative beliefs. Although the Stuber et al. paper is the only quantitative study we are aware of that has evaluated the association between social norms and smoking-related stigma, qualitative studies have reported links between social norms and smoking-related stigma. For example, a study from Scotland found that stigmatized smokers expressed being aware of how social norms are continually increasing the social undesirability of smoking behavior (37). In addition, a qualitative study in Canada found that the denormalization of tobacco had contributed to the development of smoking-related stigma among smokers (6, 36).

In both Mexico and Uruguay, nicotine dependence modified the association between social norms and smoking-related stigma. In Uruguay, smokers with weaker anti-smoking societal norms and higher levels of nicotine dependence were more likely to experience higher levels of stigma (negative stereotype of smokers), compared to smokers with weaker societal norms and lower levels of nicotine dependence. Nicotine dependence contributed to high levels of smoking-related stigma, but only when societal norms were weak. It is possible that smokers who are addicted to nicotine may experience not only the stigma that results from their smoking, but also stigma that results from their addiction. Previous research that has studied the stigma of addiction suggests that people who suffer from addiction are more likely to be devaluated, negatively judged and marginalized (8, 9). In Mexico, smokers with fewer smoking friends and higher levels of nicotine dependence were more likely to feel uncomfortable about smoking compared to smokers with fewer smoking friends and lower nicotine dependence. It is possible that smokers with higher levels of nicotine dependence but with fewer smoking friends (or no smoking friends) may have fewer places where they can smoke without feeling judged or criticized, as smokers may feel more comfortable about smoking when surrounded by other smokers (57).

Although results from our study showed that the associations between social norms and smoking-related stigma were consistent across countries, the associations between SES and smoking-related stigma differed across countries. In Uruguay, smokers with lower education and lower income were more likely to perceive a negative stereotype of smokers. This is consistent with a study among smokers in New York City that found that smokers with less education or less income were more likely to feel

stigmatized (socially withdraw from non-smokers). It is possible that smokers of low SES are subjected to dual stigmatization, as they are stigmatized for being poor and being smokers (14). Thus, this may explain why smokers of low SES would experience higher levels of smoking-related stigma. Conversely, Mexican smokers with higher SES were more likely to experience smoking-related stigma compared to their lower SES counterparts. One factor that may contribute to this discrepancy is the difference between Mexico and Uruguay in the social gradient of smoking. Mexico has a positive social gradient in smoking which is inconsistent with most other countries that demonstrate protective associations between SES and smoking (114). It is possible that the tobacco epidemic is still in earlier stages in Mexico as compared to Uruguay and the smoking pattern observed here is in some way associated with the positive relationship between SES and smoking-related stigma.

In this study, nicotine dependence modified the relationship between SES and smoking-related stigma in Uruguay, but not Mexico. It is possible that nicotine dependence was not an effect modifier in Mexico because of the low levels of cigarette addiction. In fact, fewer than 60% of smokers in our Mexican sample were daily smokers, while 90% of smokers in our Uruguayan sample were daily smokers. In Uruguay, smokers with high SES (i.e., income and education) and high levels of nicotine dependence were more likely to perceive that smokers were marginalized compare to their less affluent counterparts. It is possible that Uruguayan smokers of high SES may reside in environments where smoke-free policies are pervasive (i.e. workplace, restaurants and bars). However this hypothesis was not tested in this study. Nicotine dependence may not be an important predictor of smoking-related stigma for smokers of

low SES, as the stigma related to poverty may outweigh the effects of stigma associated with addiction.

### **Strengths and limitations**

To the best of our knowledge, this is the first study to use longitudinal data to evaluate the influence of social factors (i.e., SES and social norms) on smoking-related stigma. Furthermore, this is the first study to investigate the role of nicotine dependence as an effect modifier in these associations. However, there are important limitations to be considered. For instance, information bias cannot be disregarded in this study, as both the outcome variables (i.e., smoking-related stigma) and the exposure variables (i.e., SES and social norms) were assessed through self-reported data. Moreover, this study may not capture the whole experience of smoking-related stigma as we only used three out of the five components proposed by Link and Phelan (19). Future research should focus on developing a set of consistent measures that capture the whole experience of smoking-related stigma proposed by Link and Phelan. Furthermore, in this study we were limited to using measures of perceived smoking-related stigma; however, future studies should evaluate the use of internalized measures of smoking-related stigma through tools such as the ISSI proposed in a previous study (52). In our study, both exposure (i.e., social norms and SES) and outcome variables were measured at the same wave. It is possible that a longer time frame is required for these social factors to influence the development of stigma. However, in a sensitivity analysis where we used a lagged variable to evaluate smoking-related stigma at time  $(t+1)$  as a function of these social factors at time  $(t)$ , we found results to be qualitatively similar to our main analysis. To account for the missing data for income, in this study we used the missing indicator method, where the people

who responded “don’t know” were grouped into a separate category. Previous studies suggest that the use of the missing indicator method can produce biased results, and instead a complete case analysis of the data is recommended (108, 109). Thus, we conducted a sensitivity analysis where we excluded the subjects with missing data for income. Results from a complete case analysis were qualitatively similar to our main analysis, indicating that the missing indicator method was likely unbiased. In this study, bias could also result from loss to follow-up, as there were significant differences between the socio-demographic variables (age, sex, education and income) among participants in the study sample and those who were loss to follow-up. However in this study we adjusted for many factors that could be related to loss to follow-up: sex, age, nicotine dependence, and SES (when SES was not the main exposure variable).

## **Conclusions**

This study evaluated how SES and social norms influence smoking-related stigma in Mexico and Uruguay. Injunctive social norms were consistently associated with smoking-related stigma in both countries. The association between SES and stigma was more complex and differed between these two countries. This suggests that the effects of stigma on smokers may differ across cultures. Our study may have important implications for the development of the next generation of tobacco control policies, as the factors that drive the social unacceptability of tobacco may also produce stigmatization among smokers. Future research should determine whether policy-promoted stigmatization leads to undesirable outcomes for smoking cessation.

Table 3.1 Selected characteristics of study sample, 2008–2012 ITC Mexico, Uruguay Survey

Variables	Mexico				Uruguay		
	2008	2010	2011	2012	2008	2010	2012
	n=1617	n=1727	n=1668	n=1658	n=1,169	n=1037	n=1090
Age, (%)	39.14 (.44)	40.48 (.44)	40.83 (.49)	42.72 (.53)	39.54 (.61)	42.59 (.66)	42.48 (.66)
Sex, (%)							
Male	0.62	0.63	0.62	0.62	0.51	0.49	0.46
Female	0.38	0.37	0.38	0.38	0.49	0.51	0.54
Quartiles of income, (%)							
1	0.25	0.28	0.21	0.25	0.20	0.22	0.16
2	0.26	0.28	0.36	0.32	0.21	0.26	0.23
3	0.20	0.19	0.23	0.21	0.17	0.17	0.17
4	0.20	0.19	0.14	0.12	0.34	0.26	0.41
Don't know	0.09	0.07	0.06	0.08	0.08	0.10	0.02
Education, (%)							
No school or primary	0.27	0.33	0.31	0.29	0.27	0.23	0.27
Middle school	0.30	0.31	0.32	0.34	0.39	0.37	0.31
High school, incomplete university	0.31	0.27	0.27	0.26	0.19	0.24	0.28
University graduate	0.12	0.10	0.10	0.11	0.15	0.17	0.13
Feeling uncomfortable, (%)							
Yes	0.57	0.53	0.60	0.56	0.66	0.67	0.62
No	0.43	0.47	0.40	0.44	0.34	0.33	0.38
Negative stereotype, (%)							
Yes	0.86	0.78	0.82	0.82	0.95	0.93	0.92
No	0.14	0.22	0.18	0.18	0.05	0.07	0.08
Marginalization, (%)							

Yes	0.48	0.44	0.50	0.46	0.36	0.43	0.42
No	0.52	0.56	0.50	0.54	0.64	0.57	0.58
Societal Norms, (%)							
Strongly agree	0.13	0.15	0.10	0.14	0.10	0.13	0.15
Agree	0.40	0.41	0.44	0.43	0.42	0.45	0.45
Disagree or neutral	0.47	0.44	0.46	0.44	0.49	0.42	0.41
Close social network norm, (%)							
Strongly agree	0.24	0.28	0.25	0.28	0.24	0.33	0.34
Agree	0.53	0.46	0.56	0.52	0.60	0.54	0.53
Disagree or neutral	0.23	0.27	0.18	0.19	0.16	0.13	0.13
Friend norms, mean (SD)	3.27 (0.05)	3.43 (.05)	3.16 (.05)	3.12 (0.06)	3.45 (.07)	3.17 (0.8)	3.28 (.08)
Nicotine dependence (Mexico), (%)							
non-daily	0.35	0.33	0.33	0.32			
less than 5	0.22	0.20	0.21	0.26			
5 to 10	0.28	0.33	0.33	0.26			
More than 10	0.15	0.14	0.13	0.13			
Nicotine dependence (Uruguay), (%)							
					1.9 (.07)	1.89 (.07)	2.08 (.09)
Smoking status							
Every day					0.91	0.90	0.91
Less than everyday					0.09	0.10	0.09



Table 3.2 Adjusted risk ratios of the association between close social network norms and feeling uncomfortable about smoking, 2008-2012 ITC Mexico, Uruguay Survey

<b>Adjusted Risk ratios(95% CI)</b>				
<b>Feeling uncomfortable</b>				
<b>Variables</b>	<b>Mexico (n=6670)</b>		<b>Uruguay (n=3296)</b>	
	<b>Unadjusted</b>	<b>Adjusted*</b>	<b>Unadjusted</b>	<b>Adjusted*</b>
<b>Close social network norms</b>				
<b>Norms</b>				
Disagree or neutral	1	1	1	
Agree	2.24 [1.90-2.64]	2.21 [1.88-2.61]	2.51 [1.9-3.31]	2.45 [1.85-3.23]
Strongly agree	3.17 [2.61-3.86]	3.15 [2.59-3.83]	2.56 [1.84-3.56]	2.48 [1.78-3.46]
<b>Income (quartile)</b>				
1		0.93 [0.74-1.16]		0.99 [0.69-1.43]
2		0.81 [0.65-0.99]		0.87 [0.66-1.15]
3		0.91 [0.73-1.12]		1.08 [0.79-1.47]
4		1		1
Don't know		0.9 [0.69-1.17]		0.69 [0.47-1.01]
<b>Education</b>				
No school or primary		1.01 [0.79-1.31]		0.93 [0.63-1.37]
Middle school		1.18 [0.93-1.5]		0.87 [0.62-1.23]
High school, incomplete				
university		1.05 [0.83-1.33]		1.02 [0.71-1.45]
University graduate		1		1
<b>Age</b>		1 [0.99-1.00]		1 [0.99-1.01]
<b>Sex</b>				
Male		1		0.94 [0.74-1.17]
Female		1.13 [0.99-1.30]		1
<b>Nicotine dependence (Mexico)</b>				
non-daily		1		
less than 5		1.14 [0.96-1.37]		
5 to 10		1.02 [0.86-1.21]		
More than 10		1.24 [0.98-1.57]		
<b>Nicotine dependence (Uruguay)</b>				
				1.08 [1.01-1.16]
<b>Smoking status</b>				
Every day				1.17 [0.79-1.74]
Less than everyday				1

\*Also adjusted for year of survey data

Table 3.3 Adjusted risk ratios of the association between societal norms and feeling uncomfortable about smoking, 2008-2012 ITC Mexico, Uruguay Survey

<b>Adjusted Risk ratios(95% CI)</b>				
<b>Feeling uncomfortable</b>				
<b>Variables</b>	<b>Mexico (n=6670)</b>		<b>Uruguay (n=3296)</b>	
	<b>Unadjusted</b>	<b>Adjusted*</b>	<b>Unadjusted</b>	<b>Adjusted*</b>
<b>Societal Norms</b>				
<b>Norms</b>				
Disagree or neutral	1	1	1	1
Agree	3.69 [3.20-4.27]	3.71 [3.21-4.29]	3.28 [2.62-4.09]	3.37 [2.70-4.22]
Strongly agree	6.3 [4.87-8.16]	6.46 [5.00-8.35]	4.35 [2.95-6.39]	4.62 [3.08-6.92]
<b>Income (quartile)</b>				
1		0.97 [0.76-1.23]		0.86 [0.6-1.21]
2		0.87 [0.70-1.08]		0.72 [0.54-0.98]
3		0.89 [0.71-1.11]		0.95 [0.71-1.28]
4		1		1
Don't know		0.86 [0.64-1.15]		0.62 [0.42-0.91]
<b>Education</b>				
No school or primary		0.95 [0.72-1.25]		0.79 [0.53-1.19]
Middle school		1.05 [0.81-1.37]		0.8 [0.56-1.15]
High school, incomplete university		0.96 [0.74-1.24]		1.01 [0.69-1.48]
University graduate		1		1
<b>Age</b>		0.99 [0.99-1.00]		1 [0.99-1.01]
<b>Sex</b>				
Male		1		1
Female		1.15 [1.00-1.34]		0.89 [0.71-1.12]
<b>Nicotine dependence (Mexico)</b>				
non-daily		1		
less than 5		1.08 [0.89-1.31]		
5 to 10		0.99 [0.83-1.19]		
More than 10		1.1 [0.86-1.42]		
<b>Nicotine dependence (Uruguay)</b>				
				1.06 [0.99-1.13]
<b>Smoking status</b>				
Every day				1.23 [0.82-1.84]
Less than everyday				1

\*Also adjusted for year of survey data

Table 3.4 Adjusted risk ratios of the association between friend norms and feeling uncomfortable about smoking, 2008-2012 ITC Mexico, Uruguay Survey

<b>Adjusted Risk ratios(95% CI)</b>				
<b>Feeling uncomfortable</b>				
<b>Variables</b>	<b>Mexico (n=6670)</b>		<b>Uruguay (n=3296)</b>	
	<b>Unadjusted</b>	<b>Adjusted*</b>	<b>Unadjusted</b>	<b>Adjusted*</b>
<b>Friend norms</b>				
<b>Friend norms</b>	1.01 [0.97-1.05]	1.02 [0.97-1.06]	0.93 [0.87-0.99]	0.93 [0.87-1.00]
<b>Income (quartile)</b>				
1		1 [0.8-1.24]		0.93 [0.65-1.32]
2		0.82 [0.67-1.00]		0.83 [0.63-1.09]
3		0.92 [0.75-1.12]		1.05 [0.78-1.43]
4		1		1
Don't know		0.89 [0.68-1.16]		0.62 [0.43-0.91]
<b>Education</b>				
No school or primary		0.94 [0.73-1.21]		0.98 [0.66-1.44]
Middle school		1.09 [0.86-1.39]		0.92 [0.66-1.30]
High school, incomplete				
university		1.01 [0.80-1.28]		1.06 [0.75-1.51]
University graduate		1		1
<b>Age</b>		1 [0.99-1.00]		1 [0.99-1.01]
<b>Sex</b>				
Male		1		1
Female		1.17 [1.02-1.34]		0.93 [0.74-1.16]
<b>Nicotine dependence (Mexico)</b>				
non-daily		1		
less than 5		1.14 [0.95-1.36]		
5 to 10		0.99 [0.83-1.17]		
More than 10		1.21 [0.96-1.52]		
<b>Nicotine dependence (Uruguay)</b>				
				1.09 [1.01-1.16]
<b>Smoking status</b>				
Every day				1.21 [0.81-1.79]
Less than everyday				1

\*Also adjusted for year of survey data

Table 3.5 Adjusted risk ratios of the association between close social network norms and perceiving a negative stereotype of smokers, 2008-2012 ITC Mexico, Uruguay Survey

<b>Adjusted Risk ratios(95% CI)</b>				
<b>Negative stereotypes of smokers</b>				
<b>Variables</b>	<b>Mexico (n=6670)</b>		<b>Uruguay (n=3296)</b>	
	<b>Unadjusted</b>	<b>Adjusted*</b>	<b>Unadjusted</b>	<b>Adjusted*</b>
<b>Close social network norms</b>				
<b>Norms</b>				
Disagree or neutral	1	1	1	1
Agree	3.04 [2.52-3.65]	3.13 [2.6-3.78]	1.65 [0.98-2.78]	1.76 [1.04-2.99]
Strongly agree	3.67 [2.92-4.60]	3.78 [3.00-4.77]	2.09 [1.14-3.83]	2.35 [1.25-4.42]
<b>Income (quartile)</b>				
1		0.75 [0.57-1.00]		1.31 [0.62-2.74]
2		0.75 [0.57-0.98]		1.6 [0.92-2.76]
3		0.8 [0.61-1.06]		0.96 [0.51-1.81]
4		1		1
Don't know		1.06 [0.72-1.56]		0.97 [0.48-1.96]
<b>Education</b>				
No school or primary		0.75 [0.53-1.06]		2.88 [1.34-6.18]
Middle school		0.75 [0.54-1.04]		1.38 [0.83-2.29]
High school, incomplete university		0.73 [0.52-1.01]		2.09 [1.18-3.7]
University graduate		1		1
<b>Age</b>		1 [0.99-1.01]		1.01 [1-1.03]
<b>Sex</b>				
Male		1		1
Female		0.98 [0.82-1.16]		1.03 [0.67-1.58]
<b>Nicotine dependence (Mexico)</b>				
non-daily		1		
less than 5		1.26 [1.01-1.57]		
5 to 10		1.17 [0.95-1.42]		
More than 10		1.43 [1.08-1.89]		
<b>Nicotine dependence (Uruguay)</b>				
				1.16 [1.02-1.31]
<b>Smoking status</b>				
Every day				1.1 [0.59-2.02]
Less than everyday				1

\*Also adjusted for year of survey data

Table 3.6 Adjusted risk ratios of the association between societal norms and perceiving a negative stereotype of smokers, 2008-2012 ITC Mexico, Uruguay Survey

<b>Adjusted Risk ratios(95% CI)</b>				
<b>Negative stereotypes of smokers</b>				
<b>Variables</b>	<b>Mexico (n=6670)</b>		<b>Uruguay (n=3296)</b>	
	<b>Unadjusted</b>	<b>Adjusted*</b>	<b>Unadjusted</b>	<b>Adjusted*</b>
<b>Societal Norms</b>				
<b>Norms</b>				
Disagree or neutral	1	1	1	1
Agree	2.53 [2.13-3.00]	2.55 [2.15-3.03]	1.59 [1.02-2.49]	1.39 [0.90-2.15]
Strongly agree	2.65 [2.01-3.50]	2.69 [2.05-3.54]	4.16 [2.07-8.36]	4.04 [1.96-8.35]
<b>Income (quartile)</b>				
1		0.80 [0.61-1.06]		1.16 [0.55-2.47]
2		0.79 [0.61-1.03]		1.43 [0.81-2.51]
3		0.79 [0.61-1.04]		0.89 [0.47-1.68]
4		1		1
Don't know		1.01 [0.69-1.47]		0.89 [0.46-1.73]
<b>Education</b>				
No school or primary		0.70 [0.50-0.98]		2.73 [1.29-5.76]
Middle school		0.67 [0.48-0.92]		1.38 [0.84-2.29]
High school, incomplete university		0.68 [0.50-0.94]		2.15 [1.22-3.78]
University graduate		1		1
<b>Age</b>		1 [0.99-1.00]		1.01 [0.99-1.03]
<b>Sex</b>				
Male		1		1
Female		1.01 [0.86-1.19]		1.01 [0.65-1.56]
<b>Nicotine dependence (Mexico)</b>				
non-daily		1.21 [0.98-1.50]		
less than 5		1.13 [0.93-1.37]		
5 to 10		1.29 [0.98-1.70]		
More than 10		1		
<b>Nicotine dependence (Uruguay)</b>				
				1.01 [0.99-1.03]
<b>Smoking status</b>				
Every day				1.12 [0.62-2.05]
Less than everyday				1

\*Also adjusted for year of survey data

Table 3.7 Adjusted risk ratios of the association between friend norms and perceiving a negative stereotype of smokers, 2008-2012 ITC Mexico, Uruguay Survey

<b>Adjusted Risk ratios(95% CI)</b>				
<b>Negative stereotypes of smokers</b>				
<b>Variables</b>	<b>Mexico (n=6670)</b>		<b>Uruguay (n=3296)</b>	
	<b>Unadjusted</b>	<b>Adjusted*</b>	<b>Unadjusted</b>	<b>Adjusted*</b>
<b>Friend norms</b>				
<b>Friend norms</b>	0.95 [0.90-0.99]	0.96 [0.91-1.00]	0.98 [0.87-1.11]	0.96 [0.84-1.09]
<b>Income (quartile)</b>				
1		0.82 [0.62-1.07]		1.24 [0.60-2.55]
2		0.76 [0.59-0.99]		1.52 [0.87-2.64]
3		0.81 [0.62-1.05]		0.95 [0.51-1.78]
4		1		1
Don't know		1.04 [0.71-1.52]		0.87 [0.45-1.66]
<b>Education</b>				
No school or primary		0.71 [0.51-0.98]		2.87 [1.35-6.07]
Middle school		0.7 [0.51-0.96]		1.42 [0.85-2.35]
High school, incomplete				
university		0.71 [0.52-0.98]		2.14 [1.21-3.81]
University graduate		1		1
<b>Age</b>		1.00 [0.99-1]		1.01 [0.99-1.03]
<b>Sex</b>				
Male		1		1
Female		1.01 [0.86-1.19]		1.02 [0.66-1.58]
<b>Nicotine dependence (Mexico)</b>				
non –daily		1		
less than 5		1.25 [1.01-1.55]		
5 to 10		1.13 [0.94-1.37]		
More than 10		1.39 [1.05-1.84]		
<b>Nicotine dependence (Uruguay)</b>				
				1.16 [1.02-1.33]
<b>Smoking status</b>				
Every day				1.12 [0.60-2.07]
Less than everyday				1

\*Also adjusted for year of survey data

Table 3.8 Adjusted risk ratios of the association between close social network norms and marginalization of smokers, 2008-2012 ITC Mexico, Uruguay Survey

<b>Adjusted Risk ratios(95% CI)</b>				
<b>Perceived marginalization of smokers</b>				
<b>Variables</b>	<b>Mexico (n=6670)</b>		<b>Uruguay (n=3296)</b>	
	<b>Unadjusted</b>	<b>Adjusted*</b>	<b>Unadjusted</b>	<b>Adjusted*</b>
<b>Close social network norms</b>				
<b>Norms</b>				
Disagree or neutral	1	1	1	1
Agree	1.57 [1.33-1.84]	1.58 [1.34-1.85]	1.58 [1.16-2.15]	1.61 [1.17-2.21]
Strongly agree	2.06 [1.70-2.49]	2.09 [1.72-2.52]	1.79 [1.28-2.51]	1.79 [1.27-2.53]
<b>Income (quartile)</b>				
1		1.09 [0.88-1.35]		1.22 [0.88-1.69]
2		1.01 [0.82-1.23]		1.1 [0.83-1.47]
3		0.92 [0.74-1.13]		0.87 [0.63-1.2]
4		1		1
Don't know		1.00 [0.76-1.3]		1.17 [0.77-1.77]
<b>Education</b>				
No school or primary		1.2 [0.94-1.52]		0.98 [0.65-1.47]
Middle school		1.24 [0.99-1.56]		0.84 [0.59-1.21]
High school, incomplete university		1.15 [0.93-1.44]		1.11 [0.74-1.65]
University graduate		1		1
<b>Age</b>				
		1.00 [1.00-1.01]		1.01 [1.01-1.02]
<b>Sex</b>				
Male		1		1
Female		0.94 [0.82-1.08]		1.11 [0.9-1.39]
<b>Nicotine dependence (Mexico)</b>				
Non-daily		1		
less than 5		1.26 [1.05-1.5]		
5 to 10		1.11 [0.94-1.31]		
More than 10		1.45 [1.17-1.81]		
<b>Nicotine dependence (Uruguay)</b>				
				1.10 [1.02-1.17]
<b>Smoking status</b>				
Every day				0.60 [0.41-0.88]
Less than everyday				1

\*Also adjusted for year of survey data

Table 3.9 Adjusted risk ratios of the association between societal norms and marginalization of smokers, 2008-2012 ITC Mexico, Uruguay Survey

<b>Adjusted Risk ratios(95% CI)</b>				
<b>Perceived marginalization of smokers</b>				
<b>Variables</b>	<b>Mexico (n=6670)</b>		<b>Uruguay (n=3296)</b>	
	<b>Unadjusted</b>	<b>Adjusted*</b>	<b>Unadjusted</b>	<b>Adjusted*</b>
<b>Societal Norms</b>				
<b>Norms</b>				
Disagree or neutral	1	1	1	1
Agree	2.98 [2.60-3.42]	3.01 [2.62-3.45]	3.24 [2.58-4.06]	3.23 [2.56-4.08]
Strongly agree	5.21 [4.15-6.54]	5.36 [4.28-6.71]	4.70 [3.36-6.58]	4.87 [3.43-6.92]
<b>Income (quartile)</b>				
1		1.12 [0.90-1.4]		1.13 [0.79-1.61]
2		1.09 [0.88-1.35]		0.98 [0.72-1.33]
3		0.90 [0.73-1.11]		0.77 [0.55-1.07]
4		1		1
Don't know		0.98 [0.74-1.28]		1.15 [0.76-1.74]
<b>Education</b>				
No school or primary		1.17 [0.91-1.51]		0.84 [0.55-1.28]
Middle school		1.15 [0.9-1.47]		0.76 [0.54-1.09]
High school, incomplete university		1.08 [0.85-1.36]		1.10 [0.73-1.67]
University graduate		1		1
<b>Age</b>		1.00 [1-1.01]		1.01 [1.01-1.02]
<b>Sex</b>				
Male		1		1
Female		0.94 [0.82-1.07]		1.07 [0.85-1.35]
<b>Nicotine dependence (Mexico)</b>				
non-daily		1		
less than 5		1.21 [1.01-1.46]		
5 to 10		1.10 [0.93-1.31]		
More than 10		1.35 [1.07-1.69]		
<b>Nicotine dependence (Uruguay)</b>				
				1.08 [1.01-1.16]
<b>Smoking status</b>				
Every day				0.59 [0.4-0.85]
Less than everyday				1

\*Also adjusted for year of survey data



Table 3.10 Adjusted risk ratios of the association between friend norms and marginalization of smokers, 2008-2012 ITC Mexico, Uruguay Survey

<b>Adjusted Risk ratios(95% CI)</b>				
<b>Perceived marginalization of smokers</b>				
<b>Variables</b>	<b>Mexico (n=6670)</b>		<b>Uruguay (n=3296)</b>	
	<b>Unadjusted</b>	<b>Adjusted*</b>	<b>Unadjusted</b>	<b>Adjusted*</b>
<b>Friend norms</b>				
<b>Friend norms</b>	0.95 [0.91-0.98]	0.96 [0.93-1.00]	0.91 [0.85-0.97]	0.93 [0.87-0.99]
<b>Income (quartile)</b>				
1		1.12 [0.91-1.39]		1.19 [0.86-1.64]
2		1.01 [0.83-1.23]		1.08 [0.81-1.44]
3		0.92 [0.75-1.13]		0.87 [0.62-1.21]
4		1		1
Don't know		0.98 [0.75-1.28]		1.1 [0.73-1.66]
<b>Education</b>				
No school or primary		1.15 [0.9-1.45]		1.02 [0.68-1.54]
Middle school		1.19 [0.95-1.50]		0.88 [0.62-1.26]
High school, incomplete				
university		1.14 [0.91-1.41]		1.15 [0.77-1.70]
University graduate		1		1
<b>Age</b>		1.00 [1-1.01]		1.01 [1-1.02]
<b>Sex</b>				
Male		1		1
Female		0.95 [0.83-1.09]		1.11 [0.89-1.38]
<b>Nicotine dependence (Mexico)</b>				
non-daily		1		
less than 5		1.26 [1.05-1.50]		
5 to 10		1.10 [0.94-1.29]		
More than 10		1.45 [1.16-1.80]		
<b>Nicotine dependence (Uruguay)</b>				
				1.10 [1.03-1.18]
<b>Smoking status</b>				
Every day				0.61 [0.42-0.9]
Less than everyday				1

\*Also adjusted for year of survey data

Table 3.11 Adjusted risk ratios of the association between education and feeling uncomfortable about smoking, 2008-2012 ITC Mexico, Uruguay Survey

<b>Adjusted Risk ratios(95% CI)</b>				
<b>Feeling uncomfortable</b>				
<b>Variables</b>	<b>Mexico (n=6670)</b>		<b>Uruguay (n=3296)</b>	
	<b>Unadjusted</b>	<b>Adjusted*</b>	<b>Unadjusted</b>	<b>Adjusted*</b>
<b>Education</b>				
<b>Education</b>				
No school or primary	0.92 [0.73-1.15]	0.92 [0.73-1.16]	1.01 [0.71-1.43]	0.88 [0.61-1.28]
Middle school	1.06 [0.84-1.33]	1.06 [0.84-1.33]	0.92 [0.67-1.26]	0.87 [0.63-1.2]
High school, incomplete				
university	0.99 [0.79-1.25]	1.00 [0.79-1.26]	1.08 [0.76-1.52]	1.03 [0.72-1.47]
University graduate	1	1	1	1
<b>Age</b>		1 [0.99-1.00]		1.00 [0.99-1.01]
<b>Sex</b>				
Male		1		1
Female		1.16 [1.01-1.33]		0.93 [0.74-1.17]
<b>Nicotine dependence (Mexico)</b>				
non-daily		1		1
less than 5		1.14 [0.95-1.36]		
5 to 10		0.99 [0.84-1.17]		
More than 10		1.22 [0.97-1.53]		
<b>Nicotine dependence (Uruguay)</b>				1.08 [1.01-1.15]
<b>Smoking status</b>				
Every day				1.22 [0.82-1.81]
Less than everyday				1

\*Also adjusted for year of survey data

Table 3.12 Adjusted risk ratios of the association between income and feeling uncomfortable about smoking, 2008-2012 ITC Mexico, Uruguay Survey

<b>Adjusted Risk ratios(95% CI)</b>				
<b>Feeling uncomfortable</b>				
<b>Variables</b>	<b>Mexico (n=6670)</b>		<b>Uruguay (n=3296)</b>	
	<b>Unadjusted</b>	<b>Adjusted*</b>	<b>Unadjusted</b>	<b>Adjusted*</b>
<b>Income</b>				
<b>Income (quartile)</b>				
1	0.98 [0.80-1.2]	0.98 [0.80-1.20]	0.93 [0.67-1.30]	0.87 [0.62-1.23]
2	0.83 [0.69-1.01]	0.82 [0.68-1]	0.84 [0.65-1.09]	0.80 [0.62-1.03]
3	0.94 [0.77-1.14]	0.92 [0.75-1.12]	1.02 [0.76-1.38]	1.02 [0.75-1.37]
4	1	1	1	1
Don't know	0.90 [0.70-1.17]	0.88 [0.68-1.15]	0.66 [0.44-0.99]	0.6 [0.41-0.88]
<b>Age</b>		0.99 [0.99-1.00]		1.00 [0.99-1.01]

<b>Sex</b>		
Male	1	1
Female	1.17 [1.02-1.34]	0.93 [0.74-1.17]
<b>Nicotine dependence (Mexico)</b>		
non-daily	1	
less than 5	1.14 [0.95-1.36]	
5 to 10	0.99 [0.84-1.17]	
More than 10	1.21 [0.97-1.52]	
<b>Nicotine dependence (Uruguay)</b>		1.08 [1.00-1.15]
<b>Smoking status</b>		
Every day		1.22 [0.82-1.81]
Less than everyday		1

\*Also adjusted for year of survey data

Table 3.13 Adjusted risk ratios of the association between education and perceiving a negative stereotype of smokers, 2008-2012 ITC Mexico, Uruguay Survey

Adjusted Risk ratios(95% CI)				
Negative stereotypes of smokers				
Variables	Mexico (n=6670)		Uruguay (n=3296)	
	Unadjusted	Adjusted*	Unadjusted	Adjusted*
<b>Education</b>				
<b>Education</b>				
No school or primary	0.66 [0.48-0.89]	0.64 [0.47-0.87]	4.09 [2.03-8.24]	3.25 [1.55-6.8]
Middle school	0.62 [0.46-0.84]	0.64 [0.47-0.86]	1.61 [0.97-2.67]	1.49 [0.89-2.48]
High school, incomplete university	0.66 [0.48-0.90]	0.67 [0.50-0.92]	2.24 [1.29-3.90]	2.19 [1.24-3.86]
University graduate	1	1	1	1
<b>Age</b>		1.00 [0.99-1.01]		1.01 [1-1.03]
<b>Sex</b>				
Male		1		1.05 [0.68-1.62]
Female		1.03 [0.88-1.21]		1
<b>Nicotine dependence (Mexico)</b>				
non-daily		1		
less than 5		1.26 [1.02-1.56]		
5 to 10		1.13 [0.93-1.37]		
More than 10		1.39 [1.06-1.83]		
<b>Nicotine dependence (Uruguay)</b>				1.16 [1.02-1.33]
<b>Smoking status</b>				
Every day				1.13 [0.6-2.12]
Less than everyday				1

\*Also adjusted for year of survey data

Table 3.14 Adjusted risk ratios of the association between income and perceiving a negative stereotype of smokers, 2008-2012 ITC Mexico, Uruguay Survey

<b>Adjusted Risk ratios(95% CI)</b>				
<b>Negative stereotypes of smokers</b>				
<b>Variables</b>	<b>Mexico (n=6670)</b>		<b>Uruguay (n=3296)</b>	
	<b>Unadjusted</b>	<b>Adjusted*</b>	<b>Unadjusted</b>	<b>Adjusted*</b>
<b>Income</b>				
<b>Income (quartile)</b>				
1	0.75 [0.58-0.96]	0.75 [0.58-0.97]	1.74 [0.83-3.64]	1.61 [0.77-3.36]
2	0.69 [0.54-0.87]	0.71 [0.55-0.90]	1.82 [1.11-2.98]	1.79 [1.06-3.03]
3	0.77 [0.59-1.00]	0.77 [0.59-1.00]	1.04 [0.54-1.98]	1.06 [0.55-2.01]
4	1	1	1	1
Don't know	1.03 [0.71-1.49]	0.99 [0.68-1.45]	0.93 [0.47-1.80]	0.91 [0.47-1.76]
<b>Age</b>		1.00 [0.99-1.00]		1.01 [1-1.03]
<b>Sex</b>				
Male		1		1
Female		1.02 [0.87-1.2]		0.91 [0.6-1.39]
<b>Nicotine dependence (Mexico)</b>				
non-daily		1		
less than 5		1.24 [1-1.54]		
5 to 10		1.12 [0.92-1.35]		
More than 10		1.37 [1.04-1.81]		
<b>Nicotine dependence (Uruguay)</b>				1.18 [1.04-1.35]
<b>Smoking status</b>				
Every day				1.16 [0.62-2.17]
Less than everyday				1

\*Also adjusted for year of survey data

Table 3.15 Adjusted risk ratios of the association between education and marginalization of smokers, 2008-2012 ITC Mexico, Uruguay Survey

<b>Adjusted Risk ratios(95% CI)</b>				
<b>Feeling marginalized</b>				
<b>Variables</b>	<b>Mexico (n=6670)</b>		<b>Uruguay (n=3296)</b>	
	<b>Unadjusted</b>	<b>Adjusted*</b>	<b>Unadjusted</b>	<b>Adjusted*</b>
<b>Education</b>				
<b>Education</b>				
No school or primary	1.29 [1.04-1.61]	1.21 [0.97-1.5]	1.14 [0.79-1.65]	1.03 [0.70-1.51]
Middle school	1.18 [0.95-1.47]	1.23 [0.99-1.52]	0.84 [0.59-1.18]	0.86 [0.61-1.22]
High school	1.11 [0.89-1.38]	1.15 [0.92-1.42]	1.1 [0.76-1.60]	1.12 [0.76-1.66]
University graduate	1	1	1	1
<b>Age</b>		1 [1-1.01]		1.01 [1.01-1.02]
<b>Sex</b>				

Male	1	1
Female	0.96 [0.84-1.09]	1.13 [0.91-1.41]
<b>Nicotine dependence (Mexico)</b>		
non-daily	1.24 [1.05-1.48]	
less than 5	1.08 [0.92-1.27]	
5 to 10	1.42 [1.15-1.77]	
More than 10	1	
<b>Nicotine dependence (Uruguay)</b>		1.1 [1.03-1.17]
<b>Smoking status</b>		
Every day		0.62 [0.42-0.91]
Less than everyday		1

\*Also adjusted for year of survey data

Table 3.16 Adjusted risk ratios of the association between income and marginalization of smokers, 2008-2012 ITC Mexico, Uruguay Survey

<b>Adjusted Risk ratios(95% CI)</b>				
<b>Feeling marginalized</b>				
<b>Variables</b>	<b>Mexico (n=6670)</b>		<b>Uruguay (n=3296)</b>	
	<b>Unadjusted</b>	<b>Adjusted*</b>	<b>Unadjusted</b>	<b>Adjusted*</b>
<b>Education</b>				
<b>Income</b>				
<b>Income (quartile)</b>				
1	1.19 [0.98-1.45]	1.18 [0.97-1.44]	1.17 [0.87-1.57]	1.11 [0.82-1.51]
2	1.05 [0.86-1.27]	1.05 [0.87-1.28]	1.06 [0.82-1.38]	1.04 [0.79-1.37]
3	0.96 [0.78-1.17]	0.95 [0.77-1.16]	0.85 [0.62-1.15]	0.84 [0.61-1.15]
4	1	1	1	1
Don't know	1.05 [0.81-1.37]	1.01 [0.77-1.31]	1.08 [0.70-1.65]	1.07 [0.70-1.61]
<b>Age</b>		1 [1.00-1.01]		1.01 [1.01-1.02]
<b>Sex</b>				
Male		1		1
Female		0.96 [0.84-1.10]		1.1 [0.89-1.37]
<b>Nicotine dependence (Mexico)</b>				
non-daily		1		
less than 5		1.26 [1.05-1.50]		
5 to 10		1.10 [0.93-1.29]		
More than 10		1.44 [1.16-1.78]		
<b>Nicotine dependence (Uruguay)</b>				1.09 [1.02-1.17]
<b>Smoking status</b>				
Every day				0.62 [0.42-0.91]
Less than everyday				1

\*Also adjusted for year of survey data

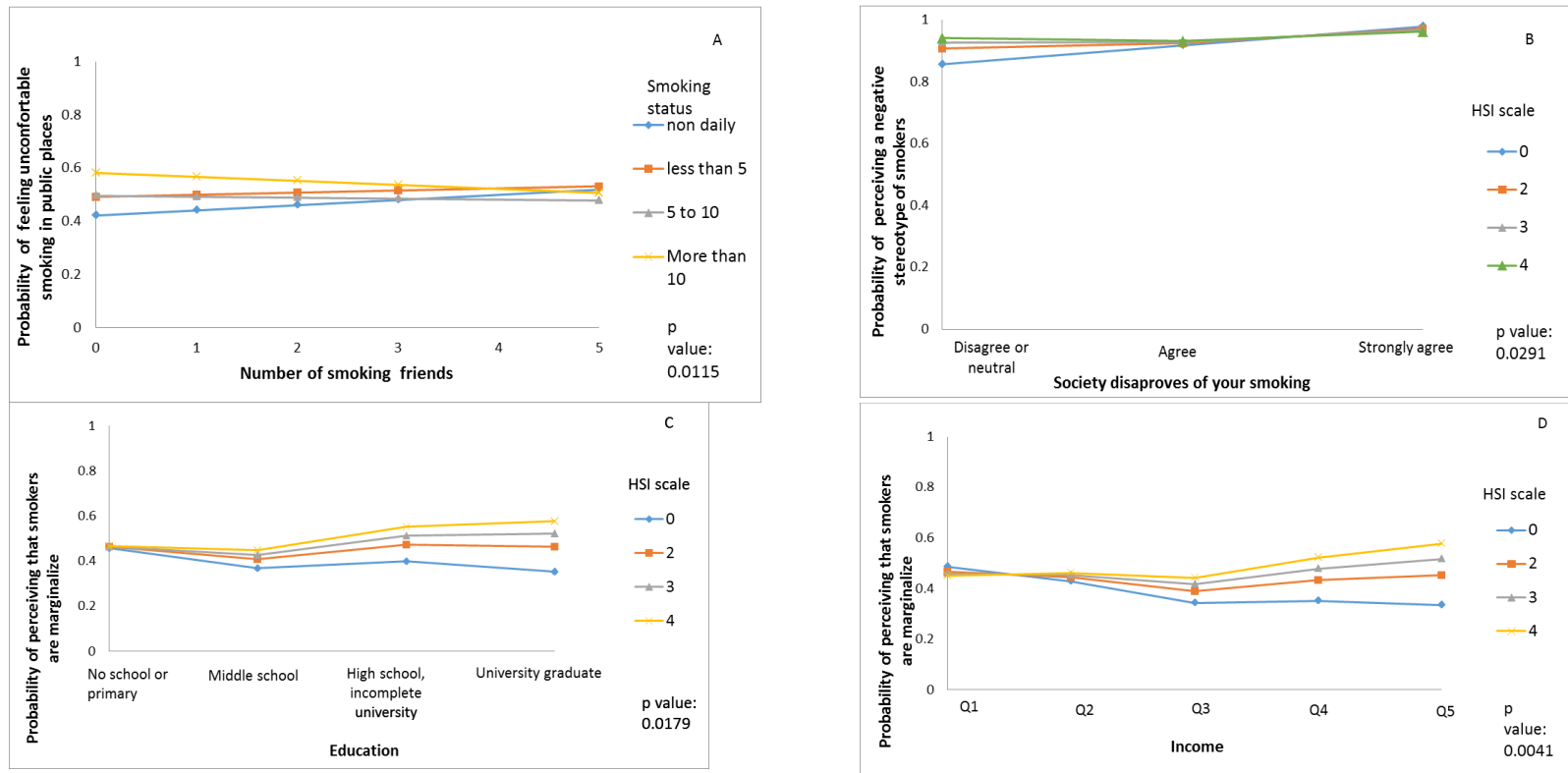


Figure 3.1 Predicted probabilities of stigma by Nicotine dependence, according to different levels of SES and social norms  
 A: Mexico  
 B-D: Uruguay

## CHAPTER 4 : THE INFLUENCE OF TOBACCO CONTROL POLICIES ON SMOKING-RELATED STIGMA IN MEXICO AND URUGUAY

### Introduction

Although initially cigarette consumption was concentrated mainly in high-income countries (HIC), the tobacco epidemic has extended to low- and middle-income countries (LMICs) (2). Nowadays, approximately 80% of smokers worldwide live in LMICs, making tobacco consumption a major public health concern (1). Yet cigarette smoking continues to increase in LMICs due to low prices, marketing and lack of awareness about its health effects (1). In an effort to address the tobacco epidemic, the World Health Organization's Framework Convention on Tobacco Control (FCTC) has formulated a number of policies that are thought to reduce cigarette consumption, such as smoke-free policies and health warning labels (HWLs) on cigarette packages (1).

Smoke-free policies were initially developed and implemented to protect non-smokers from harms caused by second hand smoking (SHS) (79). The smoke-free movement started in HICs, but after the development of the FCTC, it spread worldwide (78). Compliance with smoke-free laws has been higher in HICs compared to LMICs (71). Although compliance to smoke-free policies at bars and workplaces appear to pose particular challenges in LMICs (71, 80, 115), these policies have shown to be effective in improving population health, especially where comprehensive smoke-free laws are implemented (83). HWLs, which are also a cornerstone of the FCTC, are an important medium for communicating the negative health outcomes associated with tobacco

consumption (3). Moreover, studies suggest that HWLs are more effective at communicating tobacco consumption health risk when they are larger in size and present pictures as opposed to text (3, 93). Article 11 of the FCTC stipulates that HWLs on cigarette packages should include pictures and not cover less than 30% of the principal displayed area and should preferably cover 50% or more (3, 88). FCTC's article 11 also recommends that HWLs should be periodically rotated to prevent "wearouts" (where the HWLs are not effective over long periods of time) of the warning (89). In recent years, there has been significant progress in the implementation of HWLs worldwide, with more countries requiring pictorial warnings and increasing warning size (90).

Although tobacco control policies have been found to reduce cigarette consumption, it is possible that these policies may have also played an instrumental role in making smoking socially unacceptable (3). Smoke-free policies (116) and HWLs (12, 117) advocate for the denormalization of tobacco by changing the social norms around tobacco use (106). These denormalizing strategies may, in fact, lead to smoking-related stigma among smokers who may be more disadvantaged and have fewer resources to help them quit (106).

### **The Mexican and Uruguayan Context**

Both Mexico and Uruguay have introduced smoke-free policies and prominent pictorial HWLs. However, there are notable differences in the implementation of tobacco control policies in both of these countries. For instance, while Uruguay issued a comprehensive smoke-free law in both enclosed public places and workplaces in 2006, it was not until 2008 that smoke-free laws were implemented in Mexico. Comprehensive smoke-free policies were first implemented in Mexico City in 2008. That same year, a



federal law was signed that prohibited smoking in workplaces (including hospitality venues), but allowed smoking in designated smoking areas (as long as they had a separate ventilation system and were physically separated by walls) (80). Despite the difference in smoke-free policy implementation in these two countries, a previous study suggest that smoke-free policies may be associated with higher social unacceptability of smoking in Mexico and Uruguay (71).

As with smoke-free policy, Mexico and Uruguay have very different histories of HWL policies. In Uruguay, pictorial HWLs were first implemented in 2006, requiring that HWLs cover 50% of the front and back of the package. In 2009, the Uruguayan government implemented a new policy which increased the HWL size to 80% of the front and back of the package, which, at the time, was the largest HWL in the world (99). There were two rounds of different HWLs implemented in Uruguay in 2006 and 2008, respectively. These two rounds of HWLs consisted of symbolic images (e.g., cigarette as a tombstone or prison bars) (92). However, a third rotation of HWLs released in 2009, used more emotionally engaging graphic images, including images of gruesome diseased organs, death, and human suffering, as well as two abstract representations of poison (e.g., dead rat) and impotence. Meanwhile, pictorial HWLs were first implemented in Mexico in 2010, and were required to cover 30% of the front with a picture and 100% of the side and back of the cigarette package with only textual information. Mexico has introduced new HWLs every 3-6 months, the fastest rotation of HWL content in the world (118).

Few studies have investigated the influence of tobacco control policies on smoking-related stigma. Previous research suggests that smoke-free laws may make

smoking socially undesirable by supporting social norms against smoking, which could contribute to stigma formation (71, 119, 120). However, empirical studies have not found an association between smoke-free laws in bars (5, 7) or workplaces (5) and smoking-related stigma. Moreover, it is possible that prominent, pictorial HWLs promotes smoking-related stigma. HWLs disrupt brand imagery, creating a marked difference between tobacco and other products (121). Given the highly “socially visible” nature of cigarette packaging at point of sale and through regular consumption in public view, this differentiation may similarly serve to demarcate and reinforce differences between smokers and non-smokers. Policies that segregate a particular group from others, as might happen with pictorial HWLs, may lead to stigma formation (5). To date, there are no studies that have evaluated the association between attention to HWLs and smoking-related stigma.

In this study, we hypothesize that greater exposure to smoke-free policies will be related to smoking-related stigma in Mexico and Uruguay. We also expect that attention to HWLs will be positively associated with smoking-related stigma in both of these countries. It is also likely that people who suffer from addiction are prone to stigmatization (8, 9). Therefore, we also investigated the role of nicotine dependence as an effect modifier of the policy/stigma associations. We expect that smokers with higher levels of nicotine dependence and greater exposure to SHS or higher levels of perceived attention to HWLs, will experience more stigma than their counterparts with lower levels of nicotine dependence and greater exposure to SHS or higher levels of perceived attention to HWLs.

## Methods

### Population

We analyzed data from the Mexican and Uruguayan survey administrations of the International Tobacco Control Policy Evaluation (ITC) Project, a population-based, longitudinal survey of adult smokers in selected cities (7 Mexican cities and 5 cities in Uruguay). Data collection began in 2006, and used a stratified, multi-stage sampling scheme with face-to-face interviews. A detailed description of the methodology can be found elsewhere (122, 123). Participants were eligible to participate if they were adult (18 years or older) current smokers. The data used from ITC-Mexico in this study came from Wave 3 (conducted from November-December 2008), Wave 4 (conducted from January- February 2010), Wave 5 (conducted from April-May 2011), and Wave 6 (conducted from October-December 2012). The data from ITC-Uruguay used in this study came from Wave 2 (conducted from September 2008-February 2009), Wave 3 (conducted from October 2010- January 2011), and Wave 4 (conducted from September-December 2012).

The Mexican sample in this study (Wave 3 to 6) consisted of 8388 observations. We excluded all observations who had quit smoking at each wave (n=1183) and observations who had missing values for all variables analyzed in this study (n=504). Therefore, the final sample size for the Mexican sample was 6701 observations. Likewise, the initial Uruguayan sample consisted of 4221 observations (Wave 2 to 4). After excluding observations who had quit smoking at each wave (n=528) and had missing values for some variables analyzed in this study (n=353), our study sample size consisted of 3340 observations.

### **Smoking-related stigma measures**

Link and Phelan conceptualized stigma as the labelling, negative stereotypes, social distancing, emotional reactions and status loss that results when a group that lacks power deviates from the norm (19). In this study, we used three aspects of Link and Phelan conceptualization of stigma: negative stereotype of smokers, status loss and emotional reactions. Negative stereotype of smokers was measured by asking participants how strongly they agreed that “Any negative impact that smoking causes is the smokers' fault.” (negative stereotypes of smokers). To assess status loss, participants were asked how strongly they agreed that “People who smoke are more and more marginalized” (perception that smokers are marginalized). Emotional reactions were measure by asking respondents how strongly they agreed that “There are fewer and fewer places where you feel comfortable smoking” (feeling uncomfortable). Response to these questions included: “Strongly disagree”, “Disagree”, “Neither agree nor disagree”, “Agree” and “Strongly Agree”. The stigma measures used in this study were dichotomized into “stigmatized” and “not stigmatized”. Smokers were grouped into the “stigmatized” if they agreed or strongly agreed to any of the previous questions, otherwise respondents were considered to not be stigmatized. Stigma was also treated as a three-level categorical variable (where 1= stigmatized, 2=neutral, and 3=not stigmatized) in a sensitivity analysis.

### **Exposure to tobacco control policy measures**

We evaluated two tobacco control policies: health warning labels and smoke-free policies. Exposure to the HWL policy was measured as perceived attention to HWLs. To

assess perceived attention to HWLs, we averaged smokers' responses to the following questions: (1) "In the last month, how often have you noticed HWLs on cigarette packages?" and (2) "In the last month, how often have you read the HWLs on cigarette packages?" Response options for these two questions were: "Never", "Once in a while", "Often", "Very often" and "Don't know" ("Don't know" responses were set to missing). Before averaging these two questions, we excluded all participants that had missing data in any of the two questions. Additionally, we recoded respondents to never having read a HWL in the last month, if they reported never having notice a HWL in the last month. Perceived attention to HWLs was treated as a continuous variable in the main analysis, ranging from 1-4. Two sensitivity analyses were conducted in which only the second question regarding reading HWLs was considered. In one of the sensitivity analysis, this variable was treated as a continuous variable and in the second sensitivity analysis the variable was treated as categorical.

Self-reported exposure to SHS at different venues (i.e., workplaces, restaurants or cafes, and bars) was used as a proxy for a measure of compliance with smoke-free policy. Exposure to SHS in workplaces was assessed by asking participants (who were in paid work and worked in indoor areas) if, in the last month, other people had smoked in their workplace. We categorized responses as follows: not exposed to the smoke-free workplace policy (i.e., no paid work or did not work indoors), not exposed to SHS at workplaces, or exposed to SHS at workplaces. Participants who were not employed in paid indoor workplaces were categorized as not exposed to the workplace smoke-free policy. Likewise, exposure to SHS in other venues, including restaurants/cafes or bars, were measured by asking participants if they had been to these venues in the last six

months. Smokers who had visited any of these venues at least once within the last six months were then asked if during their most recent visit anyone had smoked inside. Responses to these questions were coded as not exposed to the smoke-free policy, not exposed to SHS, or exposed to SHS at either restaurants/cafes or bars. Respondents who reported that they had not visited any of these venues within the last six months were considered not exposed to smoke-free policies at restaurants/cafes or bars.

### **Nicotine dependence**

Nicotine dependence in Uruguay was assessed using the Heaviness of Smoking Index (HSI), which was estimated by summing two categorical measures: number of cigarettes per day (CPD) and time to first cigarette (TTFC) (111). The HSI ranges from zero to six and has been shown to be positively associated with nicotine dependence (111). Additionally, a daily smoking status variable (1=smoke every day, 0=smoke less than every day) was used as a control variable in Uruguay. The HSI was not a good measure of nicotine dependence in Mexico, due to the low intensity smoking patterns in the country (112). In Mexico, we used a four-level categorical variable to measure CPD (1=non-daily, 2=less than 5 cigarettes per day, 3=5 to 10 cigarettes per day, and 4=more than 10 cigarettes per day).

### **Covariates**

The covariates used as potential confounders were age, sex and SES. Age was treated as a continuous variable and sex was dichotomized. Education and monthly income were used as markers of socioeconomic status (SES). Education was categorized as primary education or less, middle school, vocational school/ high school/ incomplete university, and university/ post-graduate in both countries. In Mexico and Uruguay, we

collapsed income categories to divide the data into approximate quartiles. Participants, who responded “Don’t know” to this question were grouped in a fifth category. In addition, we controlled for two other covariates: a variable that indicated the survey year and a time-in-sample effect variable. Longitudinal data may be prone to time-in-sample bias, which occurs when an individuals’ responses to a question may differ as a function of the number of previous waves in which the respondent has participated (124).

Thompson suggests that responses to questions such as “In the past six months, how often have you notice...?” are particularly vulnerable to this effect (124). Thus, in this study we adjusted for these time-in sample effects by including in all the adjusted models a time-in-sample variable whose value was equal to the number of waves that each participant had previously participated in (123). All covariates were measured at the wave corresponding to the dependent variable.

### **Statistical Analysis**

We calculated weighted descriptive statistics for all variables of interest and for all the survey years in Mexico and Uruguay. Generalized estimating equations (GEE) with log-binomial models were used to account for possible correlations in the outcomes over time within individuals (113). Log-binomial marginal models were used to estimate the risk ratios (RR) for these associations.

We ran three sets of GEE models for each aspect of smoking-related stigma (feeling uncomfortable, negative stereotype of smokers, and feeling marginalized). In the first set of models, we examined the crude association between the exposure variables (i.e., exposure to SHS or attention to HWLs) and smoking-related stigma. In the second set of models, we evaluated the influence of these exposure variables on smoking-related

stigma after adjusting for all individual-level covariates. Finally, the third set of models examined the interaction between each of the exposure variables and nicotine dependence (HSI in Uruguay and a measure of CPD in Mexico), after adjusting for individual-level covariates. All models were weighted to account for the sampling design and rescaled to the sample size at the city level. GEE models were run in SAS 9.4.

## Results

Table 4.1 presents the sample characteristics by country and year. The mean age of participants in Mexico and Uruguay ranged between 39 and 43 years. In Uruguay, the proportion of male and female participants was equally distributed; however, in Mexico, 60% of participants were male. In both countries, less than 20% of participants had a college education.

More than half of Mexican and Uruguayan respondents at each wave felt uncomfortable about smoking, and 78-86% of respondents in Mexico and more than 90% of respondents in Uruguay perceived a negative stereotype of smokers. Between 43-51% of participants in Mexico perceived that smokers were being marginalized. In Uruguay, between 41-65% of respondents reported perceiving that smokers were being marginalized. Mean values for perceived attention to HWLs were between 2.26 and 2.64 in both countries. Between 3-13% of respondents in both Mexico and Uruguay reported being exposed to SHS in restaurants/cafes or enclosed workplaces. Although exposure to SHS in bars in Uruguay was less than 10%, exposure to SHS in Mexico ranged between 20-31%. More than 50% of smokers reported not being exposed to smoke-free policies in restaurants/cafes, bars and enclosed working areas. In Mexico, around 30% of



participants were non-daily smokers; in Uruguay, 90% of participants were daily smokers.

Tables 4.2-4.4 presents risk ratios of the association between perceived attention to HWLs on cigarette packages and the three different aspects of smoking-related stigma (i.e., feeling uncomfortable, perceiving a negative stereotype and perceiving smokers are marginalized) in Mexico and Uruguay. Higher perceived attention to HWLs was associated with reporting more stigma for all aspects of smoking-related stigma in Mexico. Smokers who reported higher levels of perceived attention to HWLs in Uruguay were also more likely to feel uncomfortable about smoking (Table 4.2). The associations between attention to HWLs and both negative stereotypes and perceived marginalization were not statistically significant in Uruguay, although point estimates were in the same direction as Mexico (Tables 4.3 and 4.4).

Tables 4.5- 4.7 present risk ratios for the relationship between exposure to SHS in enclosed working areas and the three aspects of stigma studied. Mexican and Uruguayan smokers exposed to SHS in enclosed working areas were more likely to feel uncomfortable about their smoking compared to smokers not exposed to SHS in workplaces. Although these results were statistically significant in Mexico (Table 4.5, RR=1.35, 95% CI 1.02-1.80), they did not reach statistical significance in Uruguay. Uruguayan smokers exposed to SHS in workplaces were less likely to perceive a negative stereotype of smokers compared to smokers not exposed to SHS (Table 4.6, RR=0.45, 95% CI 0.25-0.81, adjusted model); results from Mexico were not statistically significant. In both countries, exposure to SHS in workplaces was not significantly associated with perceiving that smokers are marginalized.

Tables 4.8- 4.10 present results for exposure to SHS in restaurants/cafes and smoking-related stigma, and Tables 4.11-4.13 present results for exposure to SHS in bars and smoking-related stigma. Exposure to SHS in restaurants/cafes or bars were not significantly associated with any of the three aspects of smoking-related stigma (i.e., feeling uncomfortable, perceiving a negative stereotype of smokers and perceiving that smokers are marginalized).

Nicotine addiction did not modify any of the associations between perceived attention to HWLs or exposure to SHS and stigma in this study. In a sensitivity analysis, we treated stigma as a three-level categorical variable (where 1= stigmatized, 2=neutral, and 3=not stigmatized). Results from this sensitivity analysis showed no qualitative differences between the models that compared stigmatized to not stigmatized and the results from our main analysis. Moreover, we found no statistically significant differences between the models that compared “neutral” to “not stigmatized” (Appendix B; Table B.1-B12). Additionally, in a sensitivity analysis we assessed exposure to HWLs by asking participants whether or not they had read the HWLs in the last month. There was no qualitative difference found between the sensitivity analysis (where the read question was used either as continuous or categorical) and the main analysis (where perceived attention to HWL was used) (Appendix B; Table B.13-B.18).

## **Discussion**

In this study, we evaluated the association between perceived attention to HWLs/ exposure to SHS and smoking-related stigma among Mexican and Uruguayan smokers. We found that greater self-reported attention to HWLs on cigarette packages was positively associated with more smoking-related stigma, regardless of how it was

measured (i.e., feeling uncomfortable, perception of a negative stereotype of smokers and perception that smokers are marginalized) in both Mexico and Uruguay. When considering smoke-free policies and stigma, there was more variation across countries and across venues considered. While Mexican smokers exposed to SHS in enclosed working areas were more likely to feel stigmatized (feeling uncomfortable) compared to smokers not exposed to SHS in enclosed working areas, Uruguayan smokers exposed to SHS in enclosed working areas were less likely to feel stigmatized (perceiving a negative stereotype). Exposure to SHS in restaurants/cafes or bars was not significantly associated with smoking-related stigma in either country.

Self-reported attention to HWL on cigarette packages was associated with all aspects of smoking-related stigma in our study. Prominent pictorial HWLs on cigarette packages may influence smoking-related stigma by disrupting brand imagery and creating a marked difference between tobacco and other products which also differentiates smokers from non-smokers. Thus, it is possible that attention to HWLs may lead to a separation between smokers and non-smokers, which would therefore function to reinforce a negative stereotype of smokers. This is consistent with qualitative studies that report that smokers perceive a sense of separation and segregation from non-smokers (4, 6, 14, 37, 40).

In this study, we found that Mexican smokers exposed to SHS in workplaces experienced higher levels of smoking-related stigma (feeling uncomfortable). The implementation of smoke-free policies in Mexico may have contributed to lower social acceptability of smoking (71, 80). Smokers who report being exposed to SHS in the workplace may also perceive greater exposure to anti-smoking cues from non-smokers

(cues from others regarding the bothersome nature of cigarettes), which could lead to the development of smoking-related stigma. However, exposure to SHS in the workplaces was associated with less smoking-related stigma in Uruguay (perceiving a negative stereotype). Exposure to SHS in restaurants/cafes and bars was not associated with smoking-related stigma in this study. These results are consistent with a study conducted among current and former smokers in New York City: cumulative exposure of smoke-free policies in workplaces, bars and homes was not found to be significantly associated with smoking-related stigma (5). Furthermore, a study conducted in the Netherlands that evaluated the relationship between smoke-free policies in bars and smoking-related stigma, before and after policy implementation, found null results (7). In addition, it is possible that the relationship between exposure to SHS in the workplace and smoking-related stigma was more important in both Mexico and Uruguay than exposure to SHS in restaurants/cafes and bars, as people spend more of their time in the workplace than these other venues.

Studies suggest that tobacco control policies and other “denormalization” strategies (e.g., media campaigns) may reduce tobacco use by stigmatizing smoking. However, our study showed that although attention to HWLs on cigarette packages may contribute to stigma formation, we found limited evidence to suggest that smoke-free policies in restaurants/cafes or bars would influence smoking-related stigma. It is possible that those smoke-free policies may help change social norms without resulting in emotions such as fear and anger that may result from the graphic images (e.g., a dead rat, a child dying from SHS) on HWLs.

## Strengths and Limitations

This is the first study to investigate the role of tobacco control policies and smoking-related stigma in Latin America. Moreover, although other studies have evaluated the role of smoke-free policies and smoking-related stigma, this is the first study to investigate the association between HWLs and smoking-related stigma. However, we must acknowledge several limitations. First, our results may suffer from information bias, as both the outcome variables (i.e., smoking-related stigma measures) and the exposure variables (i.e., perceived attention to HWLs and exposure to smoke-free policies) were assessed through self-reported data. In particular, our exposure variables may suffer from recall bias as the questions asked participants to recall their exposure in the last month. Second, residual confounding may have been an issue. During the time of the study both Mexico and Uruguay implemented a series of tobacco control policies including increases in the tax of cigarettes and changes on the HWLs. A rapidly changing tobacco control environment in both countries could be affecting the link between policies and stigma. Furthermore, this study may not capture the whole experience of smoking-related stigma as we only used three out of the five components proposed by Link and Phelan (19). Future research should rely on theory to develop a set of consistent measures of smoking-related stigma. Finally, loss to follow up may have introduced bias into our study, as there were statistically significant differences between the socio-demographic covariates in the study sample and among participants who were lost to follow-up. However in this study we controlled for all factors that could be related to loss to follow up (i.e, sex, age, SES and nicotine dependence).

## Conclusions

Attention to HWLs was found to be consistently associated with smoking-related stigma. However, in this study we found that exposure to SHS in hospitality venues (i.e., restaurants/cafes and bars) was not associated with stigma. It may be possible that smoke-free policies denormalize tobacco use by changing the social norms around smoking, without creating stigma. However, these results must be interpreted with caution, as our exposure variables may suffer from recall bias and may not be the best measure of SHS.

Although, studies suggest that smoking-related stigma may lead people to quit or dissuade them from taking up smoking in the first place (5, 12), it is important to note that stigmatization could lead to negative consequences (106), although, to date, there are no studies that has shown this association. Research is needed on policy-promoted stigma and its potential consequences on smoking behavior and, ultimately, public health burden. Therefore, the question remains: “Where is the evidence that inculcating a sense of spoiled identity is a good way to get people to adopt healthier behaviors?” (39) (p. 475).

Table 4.1 Selected characteristics of study sample, 2008–2012 ITC Mexico, Uruguay Survey

Variables	Mexico				X <sup>2</sup>	Uruguay			
	2008	2010	2011	2012		2008	2010	2012	X <sup>2</sup>
	n=1645	n=1749	n=1641	n=1666		n=1158	n=1075	n=1107	
Age, mean (SE)	39.20 (.46)	40.58 (.44)	40.97 (.5)	41.79 (.78)	>0.001	39.41 (.60)	42.53 (.63)	42.77 (.67)	
Sex, (%)									
Male	0.63	0.63	0.62	0.62		0.51	0.49	0.54	
Female	0.37	0.37	0.38	0.38	0.991	0.49	0.51	0.46	0.22
Quartiles of income, (%)									
1	0.24	0.27	0.21	0.24		0.20	0.23	0.17	
2	0.27	0.28	0.35	0.33		0.21	0.25	0.23	
3	0.20	0.19	0.23	0.22		0.18	0.16	0.16	
4	0.20	0.19	0.14	0.13		0.34	0.25	0.41	
Don't know	0.09	0.07	0.06	0.08	>0.001	0.08	0.10	0.02	>0.001
Education, (%)									
No school or primary	0.28	0.33	0.31	0.28		0.26	0.23	0.28	
Middle school	0.30	0.31	0.32	0.33		0.40	0.36	0.31	
High school, incomplete									
university	0.30	0.27	0.27	0.28		0.20	0.24	0.28	
University graduate	0.12	0.10	0.10	0.12	>0.001	0.20	0.16	0.14	0.001
Feeling uncomfortable, (%)									
Yes	0.56	0.52	0.60	0.57		0.66	0.68	0.61	
No	0.44	0.48	0.40	0.43	0.03	0.34	0.32	0.39	0.016
Negative stereotype, (%)									
Yes	0.87	0.78	0.82	0.80		0.95	0.93	0.92	
No	0.14	0.22	0.18	0.20	>0.001	0.05	0.07	0.08	0.469
Marginalization, (%)									
Yes	0.48	0.43	0.51	0.44		0.65	0.43	0.41	
No	0.52	0.57	0.49	0.56	>0.001	0.35	0.57	0.59	0.198
Perceived attention to HWL, mean (SE)	2.38 (.03)	2.26 (.02)	2.44 (.03)	2.63 (.03)	>0.001	2.6 (.05)	2.64 (.04)	2.47 (.04)	>0.001

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	Exposure to SHS in restaurants and cafes, (%)									
	Not exposed to SHS	0.36	0.41	0.43	0.44		0.56	0.43	0.50	
	Exposed to SHS	0.13	0.08	0.06	0.07		0.03	0.03	0.03	
	Not exposed to the smoke-free policy									
		0.50	0.51	0.51	0.49	>0.001	0.40	0.49	0.47	0.001
	Exposure to SHS in bars, (%)									
	Not exposed to SHS	0.13	0.16	0.18	0.19		0.42	0.34	0.34	
	Exposed to SHS	0.31	0.22	0.20	0.20		0.06	0.06	0.06	
	Not exposed to the smoke-free policy									
		0.57	0.62	0.62	0.61	>0.001	0.53	0.60	0.61	>0.001
	Exposure to SHS in enclosed working areas, (%)									
	Not exposed to SHS	0.31	0.25	0.32	0.33		0.39	0.35	0.32	
	Exposed to SHS	0.09	0.07	0.06	0.06		0.08	0.12	0.13	
06	Not exposed to the smoke-free policy									
		0.60	0.68	0.62	0.61	>0.001	0.54	0.53	0.55	0.13
	Perceived attention to HWL, mean (SE)									
		2.38 (.03)	2.26 (.02)	2.44 (.03)	2.63 (.03)	>0.001	2.6 (.05)	2.64 (.04)	2.47 (.04)	>0.001
	Nicotine dependence (Mexico), (%)									
	non-daily	0.34	0.33	0.33	0.31					
	less than 5	0.22	0.20	0.21	0.26					
	5 to 10	0.29	0.33	0.33	0.29					
	More than 10	0.16	0.14	0.13	0.14	>0.001				
	Nicotine dependence (Uruguay), mean (SE)									
							1.89 (.07)	1.94 (.07)	2.05 (.08)	>0.001
	Smoking status, (%)									
	Every day						0.91	0.91	0.91	
	Less than everyday						0.09	0.09	0.09	0.834



Table 4.2 Adjusted risk ratios of the association between HWLs on cigarette packages and feeling uncomfortable about smoking, 2008-2012 ITC Mexico, Uruguay Survey

Adjusted Risk ratios (95% CI)				
Variables	Mexico (n=6701)		Uruguay (n=3340)	
	Unadjusted	Adjusted*	Unadjusted	Adjusted*
<b>Attention to HWL</b>	1.33 [1.22-1.44]	1.31 [1.21-1.42]	1.2 [1.08-1.34]	1.22 [1.09-1.37]
<b>Income (quartile)</b>				
1		1.10 [0.88-1.37]		0.85 [0.59-1.24]
2		0.91 [0.74-1.12]		0.87 [0.65-1.16]
3		0.97 [0.79-1.19]		1.08 [0.79-1.47]
4		1		1
Don't know		0.93 [0.71-1.21]		0.70 [0.47-1.04]
<b>Education</b>				
No school or primary		0.92 [0.71-1.19]		0.82 [0.56-1.20]
Middle school		1.05 [0.82-1.34]		0.79 [0.56-1.10]
High school, incomplete university		1.00 [0.79-1.27]		0.87 [0.62-1.21]
University graduate		1		1
<b>Age</b>		1.00 [0.99-1.00]		1.00 [0.99-1.01]
<b>Sex</b>				
Male		1		1
Female		1.14 [0.99-1.31]		0.93 [0.74-1.18]
<b>Addiction (Mexico)</b>				
non-daily		1.14 [0.95-1.36]		
less than 5		0.99 [0.83-1.18]		
5 to 10		1.16 [0.92-1.46]		
More than 10		1		
<b>Addiction (Uruguay)</b>				1.08 [1.01-1.16]
<b>Smoking status</b>				
Every day				1.21 [0.82-1.78]
Less than everyday				1

\*Also adjusted for year of survey data and time in sample effects

Table 4.3 Adjusted risk ratios of the association between HWLs on cigarette packages and perceiving a negative stereotype of smokers, 2008-2012 ITC Mexico, Uruguay Survey

Adjusted Risk ratios (95% CI)				
Variables	Mexico (n=6701)		Uruguay (n=3340)	
	Unadjusted	Adjusted*	Unadjusted	Adjusted*
<b>Negative stereotype of smokes</b>				
<b>Attention to HWL</b>	1.19 [1.09-1.31]	1.19 [1.08-1.31]	1.18 [0.96-1.46]	1.18 [0.94-1.48]
<b>Income (quartile)</b>				
1		0.86 [0.65-1.13]		1.24 [0.59-2.59]
2		0.82 [0.63-1.05]		1.56 [0.89-2.73]

3	0.82 [0.62-1.07]	0.96 [0.51-1.79]
4	1	1
Don't know	1.04 [0.71-1.53]	0.84 [0.43-1.64]
<b>Education</b>		
No school or primary	0.72 [0.53-1]	2.48 [1.16-5.31]
Middle school	0.71 [0.52-0.97]	1.23 [0.73-2.08]
High school, incomplete university	0.69 [0.50-0.94]	1.90 [1.08-3.37]
University graduate	1	1
<b>Age</b>	1.00 [0.99-1.00]	1.01 [1.00-1.03]
<b>Sex</b>		
Male	1	1
Female	1.01 [0.86-1.20]	1.00 [0.65-1.53]
<b>Addiction (Mexico)</b>		
non-daily	1	
less than 5	1.29 [1.04-1.60]	
5 to 10	1.15 [0.94-1.39]	
More than 10	1.44 [1.10-1.90]	
<b>Addiction (Uruguay)</b>		1.16 [1.02-1.32]
<b>Smoking status</b>		
Every day		1
Less than everyday		1.21 [0.65-2.24]

\*Also adjusted for year of survey data and time in sample effects

Table 4.4 Adjusted risk ratios of the association between HWLs on cigarette packages and perceiving that smokers are marginalized, 2008-2012 ITC Mexico, Uruguay Survey  
Adjusted Risk ratios (95% CI)

Variables	Mexico (n=6701)		Uruguay (n=3340)	
	Unadjusted	Adjusted*	Unadjusted	Adjusted*
<b>Perceived marginalization of smokers</b>				
<b>Attention to HWL</b>	1.25 [1.15-1.36]	1.26 [1.16-1.37]	1.07 [0.96-1.19]	1.09 [0.98-1.22]
<b>Income (quartile)</b>				
1		1.24 [1.00-1.54]		1.11 [0.79-1.55]
2		1.07 [0.87-1.31]		1.10 [0.83-1.45]
3		0.98 [0.80-1.21]		0.84 [0.61-1.17]
4		1		1
Don't know		0.99 [0.75-1.3]		1.17 [0.77-1.78]
<b>Education</b>				
No school or primary		1.16 [0.92-1.48]		0.91 [0.61-1.37]
Middle school		1.16 [0.92-1.46]		0.82 [0.57-1.18]
High school, incomplete university		1.09 [0.88-1.36]		1.04 [0.71-1.51]
University graduate		1		1
<b>Age</b>		1.00 [1.00-1.01]		1.01 [1.01-1.02]

<b>Sex</b>		
Male	1	1
Female	0.94 [0.82-1.07]	1.02 [0.82-1.28]
<b>Addiction (Mexico)</b>		
non-daily	1	
less than 5	1.25 [1.05-1.49]	
5 to 10	1.09 [0.92-1.29]	
More than 10	1.32 [1.06-1.64]	
<b>Addiction (Uruguay)</b>		1.11 [1.04-1.18]
<b>Smoking status</b>		
Every day		1
Less than everyday		0.6 [0.41-0.89]

\*Also adjusted for year of survey data and time in sample effects

Table 4.5 Adjusted risk ratios of the association between exposure to SHS in enclosed working areas and feeling uncomfortable about smoking, 2008-2012 ITC Mexico, Uruguay Survey

Adjusted Risk ratios (95% CI)				
Feeling uncomfortable				
Variables	Mexico (n=6701)		Uruguay (n=3340)	
	Unadjusted	Adjusted*	Unadjusted	Adjusted*
<b>Exposure to SHS in enclosed working areas</b>				
<b>Exposure to SHS</b>				
Not exposed to SHS	1	1	1	1
Exposed to SHS	1.32 [0.99-1.76]	1.35 [1.02-1.80]	1.15 [0.79-1.68]	1.13 [0.77-1.65]
Not exposed to the smoke-free policy	1.01 [0.87-1.17]	1.02 [0.87-1.19]	0.77 [0.63-0.96]	0.76 [0.61-0.95]
<b>Income (quartile)</b>				
1		1.07 [0.86-1.34]		0.93 [0.64-1.34]
2		0.9 [0.73-1.1]		0.91 [0.68-1.2]
3		0.96 [0.78-1.18]		1.11 [0.81-1.52]
4		1		1
Don't know		0.93 [0.71-1.21]		0.73 [0.49-1.08]
<b>Education</b>				
No school or primary		0.89 [0.69-1.15]		0.91 [0.62-1.34]
Middle school		1.02 [0.80-1.3]		0.87 [0.62-1.22]
High school, incomplete university		0.99 [0.78-1.26]		0.92 [0.66-1.3]
University graduate		1		1
<b>Age</b>				
		1 [0.99-1]		1 [0.99-1.01]
<b>Sex</b>				
Male		1		1
Female		1.16 [1.01-1.33]		0.93 [0.73-1.17]
<b>Addiction (Mexico)</b>				
non-daily		1		

less than 5	1.14 [0.95-1.36]	
5 to 10	1 [0.84-1.18]	
More than 10	1.15 [0.92-1.44]	
<b>Addiction (Uruguay)</b>		1.08 [1.01-1.15]
<b>Smoking status</b>		
Every day		1.16 [0.78-1.71]
Less than everyday		1

\*Also adjusted for year of survey data and time in sample effects

Table 4.6 Adjusted risk ratios of the association between exposure to SHS in enclosed working areas and perceiving a negative stereotype of smokers, 2008-2012 ITC Mexico, Uruguay Survey

Adjusted Risk ratios (95% CI)				
Negative stereotypes of smokers				
Variables	Mexico (n=6701)		Uruguay (n=3340)	
	Unadjusted	Adjusted*	Unadjusted	Adjusted*
<b>Exposure to SHS in enclosed working areas</b>				
<b>Exposure to SHS</b>				
Not exposed to SHS	1	1	1	1
Exposed to SHS	1.35 [0.93-1.96]	1.29 [0.88-1.89]	0.51 [0.28-0.91]	0.45 [0.25-0.81]
Not exposed to the smoke-free policy	0.88 [0.74-1.05]	0.89 [0.74-1.06]	1.19 [0.76-1.85]	0.93 [0.58-1.49]
<b>Income (quartile)</b>				
1		0.87 [0.66-1.14]		1.22 [0.57-2.59]
2		0.81 [0.63-1.05]		1.58 [0.9-2.78]
3		0.81 [0.62-1.06]		1.02 [0.55-1.88]
4		1		1
Don't know		1.06 [0.72-1.56]		0.76 [0.39-1.48]
<b>Education</b>				
No school or primary		0.74 [0.54-1.02]		2.55 [1.22-5.32]
Middle school		0.72 [0.52-0.99]		1.28 [0.75-2.18]
High school, incomplete university		0.70 [0.51-0.96]		2.10 [1.18-3.76]
University graduate		1		1
<b>Age</b>				
		1.00 [0.99-1]		1.01 [0.99-1.03]
<b>Sex</b>				
Male			1	1
Female		1.03 [0.88-1.22]		0.95 [0.62-1.45]
<b>Addiction (Mexico)</b>				
non-daily		1		
less than 5		1.29 [1.04-1.6]		
5 to 10		1.15 [0.94-1.4]		
More than 10		1.45 [1.1-1.91]		
<b>Addiction (Uruguay)</b>				1.16 [1.02-1.32]
<b>Smoking status</b>				

Every day	1.16 [0.62-2.18]
Less than everyday	1

Table 4.7 Adjusted risk ratios of the association between exposure to SHS in enclosed working areas and marginalization of smokers, 2008-2012 ITC Mexico, Uruguay Survey

Adjusted Risk ratios (95% CI)  
Perceived marginalization of smokers

Variables	Mexico (n=6701)		Uruguay (n=3340)	
	Unadjusted	Adjusted*	Unadjusted	Adjusted*
<b>Exposure to SHS in enclosed working areas</b>				
<b>Exposure to SHS</b>				
Not exposed to SHS	1	1	1	1
Exposed to SHS	1.15 [0.86-1.54]	1.14 [0.86-1.52]	1.20 [0.82-1.75]	1.20 [0.82-1.76]
Not exposed to the smoke-free policy	1.08 [0.94-1.24]	1.00 [0.86-1.16]	0.88 [0.71-1.1]	0.78 [0.62-0.98]
<b>Income (quartile)</b>				
1		1.21 [0.98-1.5]		1.19 [0.85-1.67]
2		1.05 [0.86-1.28]		1.13 [0.86-1.5]
3		0.97 [0.79-1.2]		0.86 [0.63-1.19]
4		1		1
Don't know		0.98 [0.75-1.28]		1.24 [0.81-1.88]
<b>Education</b>				
No school or primary		1.13 [0.89-1.44]		0.98 [0.65-1.47]
Middle school		1.13 [0.9-1.42]		0.88 [0.61-1.25]
High school, incomplete university		1.08 [0.87-1.35]		1.07 [0.74-1.55]
University graduate		1		1
<b>Age</b>				
		1.00 [1-1.01]		1.01 [1.01-1.02]
<b>Sex</b>				
Male		1		1
Female		0.95 [0.83-1.09]		1.02 [0.82-1.26]
<b>Addiction (Mexico)</b>				
non-daily		1		
less than 5		1.25 [1.05-1.49]		
5 to 10		1.09 [0.93-1.29]		
More than 10		1.32 [1.06-1.64]		
<b>Addiction (Uruguay)</b>				
				1.11 [1.04-1.18]
<b>Smoking status</b>				
Every day				0.59 [0.4-0.86]
Less than everyday				1

\*Also adjusted for year of survey data and time in sample effects

Table 4.8 Adjusted risk ratios of the association between exposure to SHS in restaurants and cafes and feeling uncomfortable about smoking, 2008-2012 ITC Mexico, Uruguay Survey

Adjusted Risk ratios (95% CI)				
Feeling uncomfortable				
Variables	Mexico (n=6701)		Uruguay (n=3340)	
	Unadjusted	Adjusted*	Unadjusted	Adjusted*
<b>Exposure to SHS in restaurants and cafes</b>				
<b>Exposure to SHS</b>				
Not exposed to SHS	1	1	1	1
Exposed to SHS	0.86 [0.67-1.1]	0.88 [0.68-1.13]	0.87 [0.43-1.79]	0.83 [0.41-1.67]
Not exposed to the smoke-free policy	0.93 [0.81-1.06]	0.95 [0.83-1.1]	0.85 [0.68-1.05]	0.82 [0.65-1.03]
<b>Income (quartile)</b>				
1		1.06 [0.85-1.33]		0.92 [0.63-1.32]
2		0.89 [0.72-1.09]		0.91 [0.68-1.21]
3		0.96 [0.78-1.17]		1.11 [0.81-1.52]
4		1		1
Don't know		0.92 [0.71-1.21]		0.71 [0.48-1.04]
<b>Education</b>				
No school or primary		0.90 [0.70-1.16]		0.94 [0.64-1.38]
Middle school		1.03 [0.81-1.31]		0.88 [0.62-1.24]
High school, incomplete university		1.00 [0.79-1.26]		0.94 [0.67-1.32]
University graduate		1		1
<b>Age</b>		1.00 [0.99-1]		1.08 [1.01-1.15]
<b>Sex</b>				
Male		1		1
Female		1.15 [1.00-1.32]		0.94 [0.75-1.18]
<b>Addiction (Mexico)</b>				
non-daily		1		
less than 5		1.14 [0.95-1.36]		
5 to 10		1.00 [0.84-1.19]		
More than 10		1.17 [0.93-1.47]		
<b>Addiction (Uruguay)</b>				1.08 [1.01-1.15]
<b>Smoking status</b>				
Every day				1.18 [0.79-1.75]
Less than everyday				1

\*Also adjusted for year of survey data and time in sample effects

Table 4.9 Adjusted risk ratios of the association between exposure to SHS in restaurants and cafes and perceiving a negative stereotype of smokers, 2008-2012 ITC Mexico, Uruguay Survey

Adjusted Risk ratios (95% CI)				
Negative stereotypes of smokers				
Variables	Mexico (n=6701)		Uruguay (n=3340)	
	Unadjusted	Adjusted*	Unadjusted	Adjusted*
<b>Exposure to SHS in restaurants and cafes</b>				
<b>Exposure to SHS</b>				
Not exposed to SHS	1	1	1	1
Exposed to SHS	1.15 [0.82-1.62]	1.08 [0.76-1.52]	2.23 [0.69-7.17]	1.59 [0.47-5.32]
Not exposed to the smoke-free policy	0.62 [0.52-0.73]	0.59 [0.49-0.7]	2.07 [1.28-3.35]	1.49 [0.86-2.6]
<b>Income (quartile)</b>				
1		0.98 [0.74-1.30]		1.12 [0.50-2.48]
2		0.91 [0.70-1.18]		1.48 [0.82-2.64]
3		0.87 [0.67-1.14]		0.95 [0.50-1.78]
4		1		1
Don't know		1.13 [0.77-1.65]		0.78 [0.40-1.53]
<b>Education</b>				
No school or primary		0.88 [0.63-1.22]		2.15 [1.02-4.51]
Middle school		0.80 [0.58-1.1]		1.16 [0.69-1.94]
High school, incomplete university		0.73 [0.53-1]		1.86 [1.05-3.27]
University graduate		0.12 [0.01-1.32]		
<b>Age</b>		1 [0.99-1.01]		1.01 [0.99-1.03]
<b>Sex</b>				
Male		1		1
Female		0.99 [0.84-1.17]		1.00 [0.65-1.54]
<b>Addiction (Mexico)</b>				
non-daily		1		
less than 5		1.30 [1.05-1.62]		
5 to 10		1.18 [0.97-1.44]		
More than 10		1.49 [1.13-1.97]		
<b>Addiction (Uruguay)</b>				1.15 [1.01-1.31]
<b>Smoking status</b>				
Every day				1.19 [0.64-2.21]
Less than everyday				1

\*Also adjusted for year of survey data and time in sample effects

Table 4.10 Adjusted risk ratios of the association between exposure to SHS in restaurants and cafes and marginalization of smokers, 2008-2012 ITC Mexico, Uruguay Survey

Adjusted Risk ratios (95% CI)  
Perceived marginalization of smokers

Variables	Mexico (n=6701)		Uruguay (n=3340)	
	Unadjusted	Adjusted*	Unadjusted	Adjusted*
<b>Exposure to SHS in restaurants and cafes</b>				
<b>Exposure to SHS</b>				
Not exposed to SHS	1	1	1	1
Exposed to SHS	0.95 [0.74-1.21]	0.96 [0.75-1.24]	1.32 [0.72-2.41]	1.2 [0.62-2.31]
Not exposed to the smoke-free policy	1.01 [0.88-1.16]	0.91 [0.79-1.06]	1.33 [1.07-1.66]	1.21 [0.95-1.53]
<b>Income (quartile)</b>				
1		1.23 [0.99-1.53]		1.05 [0.74-1.47]
2		1.06 [0.86-1.30]		1.06 [0.8-1.41]
3		0.98 [0.79-1.20]		0.83 [0.6-1.16]
4		1		1
Don't know		0.98 [0.75-1.29]		1.12 [0.74-1.71]
<b>Education</b>				
No school or primary		1.16 [0.91-1.49]		0.86 [0.57-1.29]
Middle school		1.15 [0.91-1.45]		0.8 [0.56-1.15]
High school, incomplete university		1.09 [0.87-1.36]		1.02 [0.70-1.50]
University graduate		0.65 [0.04-8.77]		1
<b>Age</b>				
		1 [1.00-1.01]		1.01 [1.01-1.02]
<b>Sex</b>				
Male		1		1
Female		0.95 [0.83-1.08]		1.03 [0.83-1.28]
<b>Addiction (Mexico)</b>				
non-daily		1		
less than 5		1.26 [1.05-1.49]		
5 to 10		1.10 [0.93-1.29]		
More than 10		1.33 [1.07-1.66]		
<b>Addiction (Uruguay)</b>				
				1.10 [1.03-1.18]
<b>Smoking status</b>				
Every day				0.60 [0.41-0.89]
Less than everyday				1

\*Also adjusted for year of survey data and time in sample effects



Table 4.11 Adjusted risk ratios of the association between exposure to SHS in bars and feeling uncomfortable about smoking, 2008-2012 ITC Mexico, Uruguay Survey

Adjusted Risk ratios (95% CI)				
Feeling uncomfortable				
Variables	Mexico (n=6701)		Uruguay (n=3340)	
	Unadjusted	Adjusted*	Unadjusted	Adjusted*
<b>Exposure to SHS in bars</b>				
<b>Exposure to SHS</b>				
Not exposed to SHS	1	1	1	1
Exposed to SHS	1 [0.81-1.23]	1.02 [0.83-1.26]	0.71 [0.39-1.28]	0.72 [0.4-1.29]
Not exposed to the smoke-free policy	0.94 [0.78-1.13]	0.93 [0.77-1.12]	0.92 [0.74-1.14]	0.91 [0.73-1.13]
<b>Income (quartile)</b>				
1		1.08 [0.86-1.34]		0.89 [0.62-1.28]
2		0.90 [0.73-1.1]		0.89 [0.67-1.18]
3		0.96 [0.78-1.18]		1.10 [0.8-1.5]
4		1		1
Don't know		0.92 [0.71-1.21]		0.68 [0.46-1.01]
<b>Education</b>				
No school or primary		0.90 [0.7-1.16]		0.89 [0.6-1.3]
Middle school		1.03 [0.81-1.31]		0.86 [0.61-1.2]
High school, incomplete university		0.99 [0.78-1.26]		0.93 [0.66-1.3]
University graduate		1.65 [0.13-19.56]		1.00 [0.99-1.01]
<b>Age</b>				
		1.00 [0.99-1]		1.00 [0.99-1.01]
<b>Sex</b>				
Male		1		1
Female		1.17 [1.01-1.34]		0.93 [0.73-1.18]
<b>Addiction (Mexico)</b>				
non-daily		1		
less than 5		1.14 [0.95-1.36]		
5 to 10		1.00 [0.84-1.18]		
More than 10		1.17 [0.93-1.47]		
<b>Addiction (Uruguay)</b>				
				1.07 [1-1.15]
<b>Smoking status</b>				
Every day				1.18 [0.79-1.76]
Less than everyday				1

\*Also adjusted for year of survey data and time in sample effects

Table 4.12 Adjusted risk ratios of the association between exposure to SHS in bars and perceiving a negative stereotype of smokers, 2008-2012 ITC Mexico, Uruguay Survey

Adjusted Risk ratios (95% CI)  
Negative stereotypes of smokers

Variables	Mexico (n=6701)		Uruguay (n=3340)	
	Unadjusted	Adjusted*	Unadjusted	Adjusted*
<b>Exposure to SHS in restaurants and cafes</b>				
<b>Exposure to SHS in bars</b>				
<b>Exposure to SHS</b>				
Not exposed to SHS	1	1	1	1
Exposed to SHS	1.26 [0.95-1.67]	1.22 [0.92-1.63]	2.07 [0.95-4.52]	1.61 [0.72-3.59]
Not exposed to the smoke-free policy	0.83 [0.66-1.04]	0.75 [0.59-0.96]	1.62 [1.07-2.43]	1.20 [0.81-1.79]
<b>Income (quartile)</b>				
1		0.91 [0.69-1.19]		1.19 [0.57-2.47]
2		0.86 [0.66-1.11]		1.53 [0.88-2.68]
3		0.83 [0.64-1.09]		0.97 [0.52-1.81]
4		1		1
Don't know		1.09 [0.74-1.59]		0.82 [0.42-1.58]
<b>Education</b>				
No school or primary		0.75 [0.55-1.04]		2.43 [1.12-5.29]
Middle school		0.72 [0.52-0.98]		1.23 [0.73-2.08]
High school, incomplete university		0.68 [0.5-0.94]		1.92 [1.08-3.41]
University graduate		1		1
<b>Age</b>		1 [1-1.01]		1.01 [0.99-1.03]
<b>Sex</b>				
Male		1		1
Female		1.07 [0.9-1.26]		1.01 [0.65-1.55]
<b>Addiction (Mexico)</b>				
non-daily		1		
less than 5		1.28 [1.03-1.59]		
5 to 10		1.14 [0.94-1.4]		
More than 10		1.46 [1.11-1.93]		
<b>Addiction (Uruguay)</b>				1.15 [1.01-1.31]
<b>Smoking status</b>				
Every day				1.18 [0.64-2.17]
Less than everyday				1

\*Also adjusted for year of survey data and time in sample effects

Table 4.13 Adjusted risk ratios of the association between exposure to SHS in bars and marginalization of smokers, 2008-2012 ITC Mexico, Uruguay Survey

Adjusted Risk ratios (95% CI)				
Perceived marginalization of smokers				
Variables	Mexico (n=6701)		Uruguay (n=3340)	
	Unadjusted	Adjusted*	Unadjusted	Adjusted*
<b>Exposure to SHS in bars</b>				
<b>Exposure to SHS</b>				
Not exposed to SHS	1	1	1	1
Exposed to SHS	0.99 [0.80-1.22]	1.01 [0.82-1.24]	0.89 [0.53-1.48]	0.87 [0.51-1.49]
Not exposed to the smoke-free policy	1.09 [0.92-1.3]	0.99 [0.82-1.18]	1.36 [1.08-1.72]	1.22 [0.96-1.55]
<b>Income (quartile)</b>				
1		1.21 [0.97-1.5]		1.07 [0.76-1.49]
2		1.05 [0.85-1.28]		1.07 [0.81-1.42]
3		0.97 [0.79-1.19]		0.83 [0.60-1.16]
4		1		1
Don't know		0.97 [0.74-1.28]		1.13 [0.75-1.72]
<b>Education</b>				
No school or primary		1.13 [0.89-1.44]		0.89 [0.59-1.34]
Middle school		1.13 [0.90-1.42]		0.82 [0.57-1.17]
High school, incomplete university		1.08 [0.87-1.35]		1.04 [0.71-1.53]
University graduate		1		1
<b>Age</b>				
		1.00 [1.00-1.01]		1.10 [1.03-1.18]
<b>Sex</b>				
Male		1		1
Female		0.95 [0.83-1.09]		1.01 [1.00-1.02]
<b>Addiction (Mexico)</b>				
non-daily		1		
less than 5		1.25 [1.05-1.49]		
5 to 10		1.09 [0.93-1.29]		
More than 10		1.33 [1.07-1.65]		
<b>Addiction (Uruguay)</b>				
				1.1 [1.03-1.18]
<b>Smoking status</b>				
Every day				0.60 [0.40-0.88]
Less than everyday				1

\*Also adjusted for year of survey data and time in sample effects

## **CHAPTER 5 : SMOKING-RELATED STIGMA: A PUBLIC HEALTH TOOL OR A DAMAGING FORCE?**

### **Introduction**

The study of stigma was initiated by Erving Goffman in the early 1960s. Goffman defined stigma as a relationship between an attribute and a stereotype (15), and described three main types: stigma that arises from physical deformities, stigma that results from perceived faults or flaws (e.g., weak will, dishonesty), and stigma that results from membership in a particular community (e.g., racial or religious group). Since Goffman's seminal essay on the topic of stigma there has been a considerable amount of work in this area. Researchers have analyzed different sources of stigma for chronic health conditions such as HIV/AIDS (16-18), mental illness (16, 19-22), epilepsy (23-25), obesity (26-28), disability (16) and cancer (29-31), as well as socially unacceptable behaviors such as drug addiction (32, 33), prostitution (34) and smoking (4, 5). Many of these studies have found a negative impact of stigma on the lives of the stigmatized (35). Recently, studies performed on smoking-related stigma suggest that the stigmatization of smokers may contribute to an increase in discrimination among smokers (4, 14, 36). Furthermore, a study found that smoking-related stigma may have counterproductive consequences for smokers, as it may encourage them to socially withdraw from the non-smoking community (14).

Stigma is relative to time (15, 38, 44). Thus, although smoking-related stigma is now well recognized as a powerful force with potentially counter-productive

consequences (4, 6, 14, 39), 50 years ago smoking was far from stigmatized, as it was considered a desirable habit (38). The social desirability of smoking started to decrease after studies on the negative health effects of cigarette smoking began to emerge in the early 1950's (45). However, it was not until 1964 when the Surgeon General Luther Terry issued the first report linking smoking to lung cancer (125). After this report was published, opinions about smoking become less favorable in the US (38). In the late 1970s, smoking had gone from being considered an unhealthy behavior, to being perceived as an undesirable behavior, and smokers started being associated with negative stereotypes (46); smoking had become stigmatized. Furthermore, in recent years, the implementation of tobacco control policies (e.g., smoke-free policies and HWLs) has decreased the social desirability of smoking through social denormalization strategies (12). However, the use of tobacco denormalization as a strategy to reduce smoking prevalence has been somewhat controversial, primarily due to concerns that it may promote smoking-related stigma (39).

To date, there has been very little published work on smoking-related stigma. However, qualitative and quantitative studies have consistently found that smoking-related stigma fits the definition proposed by Link and Phelan, who conceptualized stigma as the labelling, negative stereotypes, social distancing, emotional reactions, and status loss or discrimination that result when a group who lacks power deviates from the norm (19). For instance, studies suggest that smokers are subjected to labelling and negative stereotype (4, 6, 14, 37, 38), and that smokers perceive that non-smokers have labeled them as lepers (37), weak willed (4, 6), stupid (4, 6), uncivilized (14), and unclean (6, 14, 37). Studies have also found that smokers perceive a sense of separation

and segregation from non-smokers (4, 6, 14, 37, 40). A study among Scottish smokers suggested that once smoke-free policies were enacted, smokers felt segregated by the physical separation between smokers and non-smokers (37). Likewise, a quantitative study performed in Canada suggested that non-smokers preferred to be around non-smokers compared to smokers (38).

Studies that have evaluated the emotional response that results from smoking-related stigma have found that smokers expressed feelings of shame (37, 39), being blamed (37), guilt (6), disapproval (6, 37) and discomfort when smoking in public places (6, 14, 37). Studies conducted among smokers also show that stigmatized smokers are likely to feel status loss and discrimination (4, 6, 37, 40). A study among smokers in Canada found that smokers felt discriminated against by non-smokers. One of the participants in this study expressed the following: *“Even if you can’t articulate it you probably intuitively feel it in the same way that if you’re black or a woman and you’re being discriminated against, like even if you can’t articulate it or you certainly can’t prove it or you’d be at the Human Rights Commission, but you kind of know it’s happening.”*(6) (p. 921). In conclusion, research suggests smokers experience smoking-related stigma.

Despite evidence for smoking-related stigma, to date few studies that have evaluated associations between smoking-related stigma and smoking behavior (4) or smoking cessation (126). Stuber et al. found that, among a sample of smokers in New York City, smoking intensity (average number of cigarettes per day) was positively associated with social withdrawal from their non-smoking peers (4). This study were performed on cross-sectional data, thus causality could not be determined. It is possible

that stigmatized smokers may socially withdraw from non-smokers and embed themselves in environments where smoking is socially acceptable, thereby reinforcing tobacco consumption (4, 14). Brown Johnson et. al. found that smoking-related stigma was also associated with quit attempts among a sample of adult smokers in the US (52). Although no studies have evaluated the association between smoking-related stigma and successful quitting, studies show that stigmatized individuals have lower self-efficacy to quit smoking. Low levels of self-efficacy may create a sense of powerlessness in people's ability to quit smoking (6, 14). Furthermore, a qualitative study conducted in Canada found that smoking-related stigma may encourage ex-smokers to remain quit in order to avoid stigmatization (6). Thus it is possible that once smokers has quit, they may be less likely to relapse if they perceive that smoking is a stigmatized behavior.

Given the scant evidence on smoking-related stigma and smoking behaviors, as well as the lack of such studies outside of the US, the aim of this study is to evaluate if smoking-related stigma is associated with smoking behavior and cessation among cohorts of smokers in Mexico and Uruguay. We hypothesize that smoking-related stigma will result in an increase in smoking intensity among Mexican and Uruguayan smokers. We also expect that smoking-related stigma will result in a decrease in quit attempts, successful quitting and relapse among Mexican and Uruguayan smokers.

## **Methods**

### **Population**

We analyzed data from the Mexican and Uruguayan survey administrations of the International Tobacco Control Policy Evaluation (ITC) Project, a population-based, prospective longitudinal cohort study of adult smokers. Census tracts were selected from

7 Mexican cities and 5 cities in Uruguay, with probability proportional to the number of households. Data collection in both countries began in 2006 and used a stratified, multi-stage sampling scheme with face-to-face interviews. A detailed description of the methodology can be found elsewhere (122, 123). Eligible participants were aged 18 years or older, had smoked at least once during the previous week, and had smoked at least 100 cigarettes in their lifetime. Data used from ITC-Mexico came from Wave 3 (conducted from November-December 2008), Wave 4 (conducted from January-February 2010), Wave 5 (conducted from April-May 2011), and Wave 6 (conducted from October-December 2012). Data from ITC-Uruguay came from Wave 2 (conducted from September 2008-February 2009), Wave 3 (conducted from October 2010- January 2011) and Wave 4 (conducted from September-December 2012).

We defined three analytic samples of participants: the smoking intensity sample, the quit behavior sample, and the relapse sample. The smoking intensity sample included all observations for all waves who reported being smokers for at least two consecutive waves ( $n=3384$  Mexico;  $n=1410$  Uruguay). The quit behavior sample consisted of observations from Wave 2 to Wave 6 in Mexico and Wave 2 to Wave 4 in Uruguay who were smoking at time<sub>(t)</sub> and followed up at time<sub>(t+1)</sub> ( $n= 3896$  Mexico;  $n= 1525$  Uruguay). The relapse sample consisted of Wave 3 to Wave 6 observations in Mexico who had quit at time<sub>(t)</sub> and were followed up at time<sub>(t+1)</sub> ( $n= 596$  Mexico). We did not construct an analytical sample for relapse in Uruguay, as the number of observations who met criteria for such analyses was very small ( $n= 79$ ).

In Mexico, 20%, 17% and 35% of observations were lost to follow-up between Wave 3 to Wave 4, Wave 4 to Wave 5 and Wave 5 to Wave 6, respectively. In Uruguay,



30% and 24% of observations were lost to follow-up between Wave 2 to Wave 3 and Wave 3 to Wave 4, respectively.

### **Smoking intensity**

Smoking intensity in both countries was assessed by measuring the difference in cigarettes per day from one survey wave to the next. The number of cigarettes per day (CPD) was assessed by asking smokers at each wave: “On average how many cigarettes do you smoke each day”. This measure has been used in previous studies to assess smoking intensity when using panel data (127, 128).

### **Smoking cessation behavior**

We also investigated three dependent variables related to smoking cessation: quit attempts, successful quitting and smoking relapse. A quit attempt was defined as a smoker in the present wave who answered “yes” to the question, “In the past year, have you tried to quit smoking?” A smoker at the present wave was considered to have successfully quit if he/she had made a quit attempt since the previous wave, and had quit for at least one month in the present wave. A person was considered to have relapsed if he/she was a smoker in the present wave, but had quit smoking for at least 30 days at the previous wave.

### **Smoking-related stigma measures**

We used three questions to measure smoking-related stigma that fit Link and Phelan’s conceptualization of stigma (19, 41): emotional reactions, negative stereotype of smokers and status loss. We measured respondents’ emotional reactions by asking participants how strongly they agreed that “There are fewer and fewer places where you feel comfortable smoking” (feeling uncomfortable). Negative stereotype of smokers was

measured by asking participants how strongly they agreed that “Any negative impact that smoking causes is the smokers' fault”. To measure status loss we asked respondents how strongly they agreed that “People who smoke are more and more marginalized” (perception that smokers are marginalized). Responses to these questions included: “Strongly disagree”, “Disagree”, “Neither agree nor disagree”, “Agree” and “Strongly Agree”. We dichotomized the responses into “stigmatized” (agreed or strongly agreed) and “not stigmatized” (other responses).

### **Covariates**

Several individual-level sociodemographic variables were included as covariates in our models, including age, sex, education, and income. Age was treated as a continuous variable and sex was dichotomized. Education was categorized as primary education or less, middle school, vocational school/ high school/ incomplete university, and university/ post-graduate in both countries. In Mexico and Uruguay, we collapsed income categories to divide the data into approximate quartiles. Participants, who responded “Don’t know” to this question, were grouped in a fifth category. The smoking cessation models (i.e., quit attempts and successful quitting) were also adjusted for nicotine dependence. Nicotine dependence in Uruguay was assessed using the HSI, which has been shown to be positively associated with nicotine dependence (111). In Mexico, because the HSI is not a good measure of nicotine dependence in Mexico (112), we assessed nicotine dependence by using a four-level categorical variable (where 0=non-daily, 1=less than 5 cigarettes per day, 2=5 to 10 cigarettes per day, and 3=more than 10 cigarettes per day). Nicotine dependence in both countries was measured one wave prior to the wave corresponding to the dependent variable. In our final models

we also adjusted for two types of social norms: close social network norms and societal norms, as social norms may confound the smoking-related stigma/ smoking behavior relationship. Close social network norms were measured by asking residents how strongly they agreed (on a five point scale) that: “People who are important to you believe that you should not smoke.” Societal norms were measured by asking respondents how strongly they agreed (on a five point scale) that: “The Mexican/Uruguayan society disapproves of smoking.” We categorized these questions into three-level variables (1=strongly agree, 2=agree and 3=neutral or disagree).

### **Statistical Analysis**

We calculated weighted descriptive statistics for all variables of interest and for all survey years in Mexico and Uruguay. Generalized estimating equations (GEE) with robust standard errors were used to determine the relationship between smoking-related stigma (i.e., negative stereotype of smokers, feeling uncomfortable, and perception that smokers are marginalized) and smoking and cessation behaviors, to account for the nested structure of the data (122). GEE linear regression models were used when smoking intensity was the dependent variable, otherwise, log-binomial marginal models were used to estimate the risk ratio (RR). We ran three sets of models for each of the outcomes studied (i.e., smoking intensity, quit attempts, successful quitting, and relapse). The first set of models examined the crude association between each smoking-related stigma variable independently and smoking and cessation behaviors. In the second set of models we evaluated the relationship between smoking-related stigma and smoking and cessation behaviors after adjusting for individual-level covariates: age, sex, education, income, and nicotine dependence (when smoking intensity was not the dependent

variable). Finally, in the third set of models we also adjusted for social norms (i.e., close social network norms and societal norms). It is possible that smoking-related stigma may have a cumulative effect, such that it may take more than one survey wave for stigma to fully develop. Therefore, in a sensitivity analysis we used a lagged variable to evaluate smoking behavior at time  $(t+1)$  as a function of smoking-related stigma at time  $(t)$ .

All models were weighted to account for the sampling design and rescaled to the sample size at the city level to keep the observations from the largest cities from over-representing those in smaller cities. GEE models were run in SAS 9.4.

## **Results**

Table 5.1 presents the sample characteristics in Mexico and Uruguay for each analytic sample, summed across waves. The mean age of participants ranged between 43 and 45 in both countries. Although, participants were more likely to be male than female in Mexico, in Uruguay there was a higher percentage of females compared to males. In Mexico, 10-13% of participants had a college education; in Uruguay, 18% of participants had a college education. In the smoking intensity sample, there was a reduction in cigarette consumption over time in both countries. In Mexico, 38% of participants had tried to quit smoking in the past year, while 47% of the Uruguayan respondents had tried to quit smoking in the past year. Among those who had made a quit attempt, 33% and 15% had successfully quit in Mexico and Uruguay, respectively. In the relapse sample, 26% of the Mexican respondents who had quit smoking at the previous wave, had relapsed by the following wave. Between 58 and 67% of participants in Mexico and Uruguay felt uncomfortable about smoking, and 83 to 86% of respondents in Mexico and more than 90% of respondents in Uruguay perceived a negative stereotype of smokers. However,

less than half of the respondents in both countries felt that smokers were being marginalized.

Tables 5.2- 5.4 present results for the association between smoking-related stigma (i.e., feeling uncomfortable, negative stereotype and marginalization of smokers) and a change in cigarette consumption over time, in Mexico and Uruguay. None of the three aspects of smoking-related stigma were associated with an increase or reduction in cigarette consumption over time in either country.

Table 5.5 -5.7 present the risk ratios for the association between smoking-related stigma (i.e., feeling uncomfortable, negative stereotype and marginalization of smokers) and quit attempts in the last year. Smokers who felt uncomfortable about their smoking were more likely to have made a quit attempt compared to smokers who did not feel uncomfortable about their smoking, in Mexico and Uruguay, although results were not statistically significant in Mexico after adjusting for social norms (Table 5.5 Model 3: RR 1.15, 95% CI 0.94-1.40). In both countries, smokers were more likely to have made a quit attempt if they perceived a negative stereotype of smokers. However, results were not statistically significant in Uruguay after adjusting for social norms (Table 5.6 Model 3; Uruguay: RR=1.55, 95% CI 0.83–2.90).

Table 5.8 -5.10 show results for the relationship between smoking-related stigma (i.e., feeling uncomfortable, negative stereotype and marginalization of smokers) and successful quitting. We did not find an association between Mexican participants who felt uncomfortable about their smoking and successful quitting. This analysis was not performed in Uruguay due to a reduced sample size (respondents who were successfully quit at Wave 4 had missing data for the “feeling uncomfortable about smoking”

question). The relationship between participants who perceived that smokers had a negative stereotype and successful quitting smoking was not significant in either country. In both countries, respondents who perceived that smokers were marginalized were more likely to successfully quit smoking compare to those who did not perceive that smokers were marginalized; results were not statistically significant in Uruguay.

Table 5.11-5.13 presents results for the association between smoking-related stigma (i.e., feeling uncomfortable, negative stereotype and marginalization of smokers) and relapse in Mexico. These relationships were not assessed in Uruguay due to a low sample size (n=79). Mexican respondents who perceived a negative stereotype of smokers were less likely to relapse. (Table 5.12 Model 3; RR=0.48, 95% CI 0.23-1.00; p-value= 0.05). There was no association between feeling uncomfortable or marginalization of smokers and relapse. However, the relationship were in the same direction as for negative stereotype.

In a sensitivity analysis, we used lagged variables for all aspects of smoking-related stigma (i.e., feeling uncomfortable, negative stereotype and marginalization of smokers) to evaluate if smoking-related stigma at time  $(t)$  influenced the smoking behavior and cessation outcomes at time  $(t+1)$ . In general, the direction of the association was consistent in the models with the exposure variables lagged and in the models where they were not lagged for both countries (Appendix C; Table C.1-C.12). However, when we evaluated the relationship between successful quitting  $(t+1)$  as a function of smoking-related stigma at time  $(t)$  among Mexican participants, we found that the results were in the opposite direction compared to the models where the exposure was not lagged. Results were statistically significant for participants who felt uncomfortable about their

smoking at the previous survey wave (Appendix C; Table C.7 Model 2; RR=0.7, 95% CI 0.52-0.94), and participants who perceived that smokers were marginalized at the previous survey wave (Appendix C; Table C.9 Model 3; RR=0.66, 95% CI 0.5-0.89).

## **Discussion**

In this study, we used data from a population-based, longitudinal survey of adult smokers in Mexico and Uruguay to evaluate the relationship between smoking-related stigma and smoking and cessation behaviors. There was no association between smoking-related stigma and change in cigarette consumption (from one survey wave to the next) in either country. Smoking-related stigma (i.e., feeling uncomfortable and negative stereotype) was associated with a higher likelihood of making a quit attempt in both Mexico and Uruguay. Smoking-related stigma was also associated with a higher likelihood of successful quitting among Mexican participants who perceived that smokers were marginalized. Smoking-related stigma was not associated with the likelihood of successful quitting among Uruguayan smokers. Smoking-related stigma (negative stereotype) was associated with less relapse among Mexican respondents.

We found that respondents in Mexico and Uruguay who felt uncomfortable about their smoking or perceived a negative stereotype of smokers were more likely to have made a quit attempt in the past year. It is possible that in order to avoid stigmatization and withdrawal from society, smokers may try to quit smoking. These results are consistent with a study performed among smokers in the US, which found that smoking-related stigma was associated with making a quit attempt in the last year (52). This idea is supported by a study among smokers in New York that found that smoking-related stigma may motivate smokers to keep their smoking a secret, and keeping smoking a

secret is associated with strong intention to quit smoking (4). Therefore smoking-related stigma may indirectly be associated with intention to quit smoking.

We found that Mexican smokers who perceived that smokers were marginalized were more likely to successfully quit smoking compared to smokers who did not perceive that smokers were marginalized. Smokers may be motivated to quit smoking in order to avoid the negative labeling and stereotypes that are placed on current smokers (6).

However, when we evaluated the association between successful quitting as a function of smoking-related stigma (i.e., feeling uncomfortable, marginalization of smokers) at the previous wave, we found that higher levels of smoking-related stigma were associated with less successful quitting among Mexican smokers. It is possible that over time, the perceived smoking stigma (i.e., “smokers are marginalized”) that smokers may encounter will be internalized (i.e., “I am marginalized”). Studies suggest that internalized stigma may result in reduced self-efficacy (129-131). Self-efficacy has been found to be an important predictors of smoking cessation (132, 133). Furthermore, reduced self-efficacy can create a sense of powerlessness in people’s ability to quit smoking (6, 14). Also, individuals who experience internalized stigma may constrict their social networks, leading to withdrawal and insolation from their social environment (131). Stigmatized smokers may be encouraged to socially withdraw from the non-smoking community, and to frequent environments where smoking is socially acceptable (14). This may reduce the likelihood of a successful quit. It is also possible that stigmatized smokers who keep their smoking a secret will not benefit from smoking cessation programs that may help them remain quit long term (4, 126).



We found that Mexican respondents who perceived a negative stereotype of smokers were less likely to relapse, compared to participants who did not perceive a negative stereotype of smokers. To the best of our knowledge, no other studies that have evaluated the influence of smoking-related stigma on relapse. However, qualitative studies performed in Canada among smokers and quitters (quit within 2 years) report that tobacco denormalization environments may encourage ex-smokers to remain quit (6). Thus, it is possible that once a person quits smoking, the denormalization of tobacco in general, and the stigmatization of smokers in particular, may be an incentive to stay quit. However, even if effective, an important question with ethical implications therefore arises: How ethical is to stigmatize smokers and inculcate a sense of spoiled identity, if by doing so we are reducing the burden of smoking morbidity and mortality?

### **Strengths and limitations**

To the best of our knowledge, this is the first study to evaluate the influence of smoking-related stigma on smoking behavior and cessation using longitudinal data. However, there are important limitations that need to be acknowledged. For instance, although we analyzed three (i.e., emotional reaction, negative stereotype and status loss) out of the five components of smoking-related stigma proposed by Link and Phelan (19), it is possible that we did not capture the whole experience of smoking-related stigma. There is a need for further research that focuses on developing a set of consistent and reliable measures for smoking-related stigma. In this study we were limited to measures of perceived stigma; however, future studies should evaluate the influence of internalized smoking-related stigma on smoking behavior and cessation outcomes. Second, both the outcome variables (i.e., smoking behavior and smoking cessation) and the exposure

variables (i.e., smoking-related stigma) were assessed through self-reported data, which may lead to information bias. Furthermore, it may take more than one survey wave for smoking-related stigma to be internalized by smokers. Therefore, in a sensitivity analysis, we used a lagged variable to evaluate the influence of smoking-related stigma at time  $(t)$  on smoking behavior and cessation at time  $(t+1)$ . However, future studies should evaluate the influence of internalized stigma on smoking behavior and cessation, through the use of validated scales such as *The Internalized Stigma of Smoking Inventory* proposed by Brown and Johnson et al. in 2015 (52). Finally, bias could result from loss to follow-up in the study since all of our outcome variables, depended on data from two consecutive waves. However, there were no statistically significant differences between the socio-demographic covariates (age, sex, education, income and smoking intensity) or exposure variables (smoking-related stigma) in the study sample and among participants who were lost to follow-up, with a few exception: age (among participants loss to follow up from Wave 4 to Wave 5; Mexico) and income (among participants loss to follow up between Wave 5 to Wave 6; Mexico).

## **Conclusions**

We found evidence to suggest that perceived smoking-related stigma may be associated with more quit attempts among Mexican and Uruguayan respondents, more successful quitting among Mexican smokers and less relapse in Mexico. However, it is possible that once smoking-related stigma is internalize by smokers, it may function as a damaging force, as smoking-related stigma in the previous wave was associated with less successful quitting in Mexico in the current wave. These results raise important concerns about the value and ethics of denormalization strategies that seek to make smoking

socially undesirable, as the stigmatization of smokers may be one of the many factors that drive the social unacceptability of smoking.

Table 5.1 Selected characteristics of study sample, 2008–2012 ITC Mexico, Uruguay Survey

Variables	Mexico			Uruguay	
	Smoking intensity sample N=3384	Quit behavior N=3896	Relapse sample N=596	Smoking intensity sample N=1410	Quit behavior N=1525
Age, mean (SD)	42.7 (14.8)	42.7 (15.0)	45.4 (15.7)	43.2 (13.8)	43.2 (13.9)
Sex, (%)					
Male	62.0	61.9	57.9	47.0	46.6
Female	38.0	38.1	42.1	53.1	53.38
Quartiles of income, (%)					
1	24.0	24.5	25.2	17.9	18.16
2	31.5	31.4	28.5	24.7	24.33
3	22.0	21.8	22.7	16.6	16.39
4	15.4	15.4	17.3	36.2	36.33
Don't know	7.1	6.9	6.4	4.5	4.79
Education, (%)					
No school or primary	31.4	31.5	30.9	23.6	22.75
Middle school	32.0	32.0	28.9	31.6	31.41
High school, incomplete university	26.3	26.1	27.5	27.6	27.87
University graduate	10.3	10.5	12.8	17.2	17.97
Feeling uncomfortable, (%)					
Yes	57.7	59.0	58.6	66.0	66.62
No	42.4	41.0	41.4	34.0	33.38
Negative stereotype, (%)					
Yes	82.6	83.2	86.1	93.1	93.18
No	17.4	16.8	13.9	6.9	6.82
Marginalization, (%)					
Yes	46.7	47.5	49.5	42.3	43.34
No	53.3	52.5	50.5	57.7	56.66
Societal Norms, (%)					
Strongly agree	13.1	13.4	20.0	15.3	15.41
Agree	43.6	44.1	40.4	45.5	44.59
Disagree or neutral	43.3	42.5	39.6	39.3	40.00
Close social network norm, (%)					
Strongly agree	28.8	29.5	36.9	33.8	34.95
Agree	52.3	52.6	46.8	52.6	52.00
Disagree or neutral	18.8	17.9	16.3	13.6	13.05
Nicotine dependence (Mexico), (%)					

non-daily	30.6		
less than 5	23.7		
5 to 10	31.5		
More than 10	14.2		
Nicotine dependence (Uruguay), mean (SD) <sup>a</sup>			1.9 (1.7)
change in CPD, mean (SD) <sup>b</sup>	-0.4 (5.9)		-0.5(8.8)
Quit attempt, (%) <sup>c</sup>			
Yes	38.2		46.82
No	61.8		53.18
Successful quitting, (%) <sup>d</sup>			
Yes	33.3		14.57
No	66.7		85.43
Relapse, (%)			
Yes		25.8	
No		74.2	

<sup>a</sup> Uruguay: N=1402

<sup>b</sup> Mexico :N=3280; Uruguay: N=1402

<sup>c</sup> Mexico :N=3884; Uruguay: N=1517

<sup>d</sup> Mexico :N=1484; Uruguay: N=836

Table 5.2 Adjusted linear models for the association between feeling uncomfortable about smoking and change in cigarette consumption, 2008-2012 ITC Mexico, Uruguay Survey

Adjusted Models (95% CI)						
Smoking intensity						
Variables	Mexico (n=3280)			Uruguay (n=1402)		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
<b>Feeling uncomfortable</b>	-0.25 [-0.81-0.30]	-0.25 [-0.81-0.30]	-0.27 [-0.87-0.32]	-0.21 [-1.61-1.18]	-0.11 [-1.41-1.17]	0 [-1.30-1.31]
<b>Income (quartile)</b>		0.64 [-0.12-1.42]	0.63 [-0.14-1.40]			
1		-0.02 [-0.75-0.71]	-0.02 [-0.75-0.71]		-0.50 [-2.34-1.33]	-0.6 [-2.47-1.26]
2		0.52 [-0.27-1.32]	0.51 [-0.27-1.31]		-0.33 [-2.04-1.37]	-0.38 [-2.07-1.31]
3		1			-0.49 [-2.36-1.36]	-0.53 [-2.31-1.24]
4		0.68 [-0.48-1.86]	0.7 [-0.47-1.88]		1	1
Don't know					-0.55 [-4.07-2.96]	-0.75 [-4.24-2.74]
<b>Education</b>						
No school or primary		-0.26 [-1.21-0.68]	-0.23 [-1.18-0.70]		1.2 [-0.53-2.93]	1.36 [-0.42-3.16]
Middle school		0.12 [-0.7-0.95]	0.13 [-0.69-0.96]		0.5 [-1.15-2.16]	0.64 [-1.03-2.33]
High school		0.2 [-0.61-1.02]	0.19 [-0.62-1.00]		0.55 [-0.63-1.73]	0.67 [-0.48-1.84]
University graduate		1	1		1	1
<b>Age</b>		0 [-0.02-0.01]	0 [-0.02-0.01]		-0.03 [-0.07-0]	-0.03 [-0.07-0.01]
<b>Sex</b>						
Male		1	1		1	1
Female		-0.16 [-0.60-0.27]	-0.17 [-0.61-0.26]		0.07 [-1.05-1.20]	0.1 [-1.01-1.23]
<b>Societal Norms</b>						
Disagree or neutral			1			1
Agree			-0.04 [-0.61-0.51]			-0.36 [-1.67-0.94]
Strongly agree			0.26 [-0.53-1.06]			0.19 [-2.18-2.56]
<b>Close social network norms</b>						
Disagree or neutral			1			1
Agree			-0.16 [-0.87-0.55]			-0.35 [-2.02-1.30]
Strongly agree			0.02 [-0.75-0.79]			-1.31 [-3.31-0.68]

Table 5.3 Adjusted linear models for the association between perceiving a negative stereotype of smokers and change in cigarette consumption, 2008-2012 ITC Mexico, Uruguay Survey

Adjusted models ratios (95% CI)						
Smoking intensity						
Variables	Mexico (n=3280)			Uruguay (n=1402)		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
<b>Negative stereotype</b>	0.42 [-0.22-1.07]	0.43 [-0.20-1.07]	0.5 [-0.16-1.16]	-0.95 [-2.54-0.63]	-0.89 [-2.48-0.69]	-0.78 [-2.48-0.91]
<b>Income (quartile)</b>						
1		0.64 [-0.13-1.42]	0.63 [-0.14-1.41]		-0.49 [-2.34-1.35]	-0.59 [-2.47-1.27]
2		0 [-0.73-0.74]	0 [-0.74-0.73]		-0.28 [-2.03-1.46]	-0.34 [-2.09-1.39]
3		0.54 [-0.26-1.35]	0.54 [-0.25-1.34]		-0.49 [-2.39-1.40]	-0.52 [-2.31-1.26]
4		1	1		1	1
Don't know		0.68 [-0.49-1.87]	0.71 [-0.46-1.89]		-0.54 [-4.05-2.97]	-0.74 [-4.23-2.74]
<b>Education</b>						
No school or primary		-0.26 [-1.21-0.69]	-0.23 [-1.17-0.70]		1.28 [-0.42-2.98]	1.42 [-0.33-3.18]
Middle school		0.12 [-0.70-0.96]	0.14 [-0.68-0.96]		0.55 [-1.09-2.20]	0.67 [-1.00-2.35]
High school		0.2 [-0.61-1.02]	0.2 [-0.60-1.01]		0.61 [-0.56-1.79]	0.72 [-0.44-1.89]
University graduate		1	1		1	1
<b>Age</b>		0 [-0.02-0.01]	0 [-0.02-0.01]		-0.03 [-0.07-0.01]	-0.03 [-0.07-0.01]
<b>Sex</b>						
Male		1	1		1	1
Female		-0.18 [-0.62-0.25]	-0.18 [-0.62-0.25]		0.07 [-1.06-1.21]	0.1 [-1.03-1.24]
<b>Societal Norms</b>						
Disagree or neutral			1			1
Agree			-0.17 [-0.73-0.38]			-0.32 [-1.61-0.95]
Strongly agree			0.1 [-0.69-0.90]			0.26 [-2.23-2.77]
<b>Close social network norms</b>						
Disagree or neutral			1			1
Agree			-0.27 [-0.98-0.42]			-0.31 [-1.99-1.36]
Strongly agree			-0.1 [-0.85-0.65]			-1.27 [-3.22-0.67]

Table 5.4 Adjusted linear models for the association between perceiving that smokers are marginalized and change in cigarette consumption, 2008-2012 ITC Mexico, Uruguay Survey

Adjusted models (95% CI)						
Smoking intensity						
Variables	Mexico (n=3280)			Uruguay (n=1402)		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
<b>Marginalization</b>	-0.13 [-0.65-0.38]	-0.1 [-0.62-0.40]	-0.11 [-0.65-0.43]	-1.01 [-2.33-0.30]	-0.92 [-2.22-0.37]	-0.89 [-2.19-0.41]
<b>Income (quartile)</b>						
1		0.64 [-0.13-1.42]	0.63 [-0.14-1.41]		-0.39 [-2.26-1.47]	-0.49 [-2.39-1.41]
2		0 [-0.73-0.73]	0 [-0.74-0.73]		-0.26 [-2-1.47]	-0.32 [-2.06-1.40]
3		0.53 [-0.27-1.34]	0.53 [-0.27-1.33]		-0.44 [-2.31-1.42]	-0.5 [-2.28-1.28]
4		1	1		1	1
Don't know		0.69 [-0.47-1.87]	0.72 [-0.46-1.90]		-0.4 [-3.85-3.03]	-0.62 [-4.07-2.82]
<b>Education</b>						
No school or primary		-0.25 [-1.21-0.69]	-0.23 [-1.18-0.71]		1.15 [-0.58-2.88]	1.27 [-0.52-3.07]
Middle school		0.12 [-0.71-0.95]	0.13 [-0.7-0.96]		0.42 [-1.23-2.08]	0.53 [-1.16-2.23]
High school		0.19 [-0.62-1.02]	0.19 [-0.62-1.00]		0.46 [-0.72-1.64]	0.57 [-0.60-1.75]
University graduate		1	1		1	1
<b>Age</b>		0 [-0.02-0.01]	0 [-0.02-0.01]		-0.02 [-0.06-0.01]	-0.02 [-0.07-0.01]
<b>Sex</b>						
Male		1	1		1	1
Female		-0.18 [-0.62-0.25]	-0.18 [-0.62-0.25]		0.05 [-1.07-1.18]	0.08 [-1.04-1.20]
<b>Societal Norms</b>						
Disagree or neutral			1			1
Agree			-0.08 [-0.65-0.48]			-0.19 [-1.52-1.14]
Strongly agree			0.21 [-0.62-1.05]			0.53 [-1.84-2.92]
<b>Close social network norms</b>						
Disagree or neutral			1			1
Agree			-0.19 [-0.89-0.50]			-0.28 [-1.94-1.37]
Strongly agree			-0.02 [-0.76-0.72]			-1.22 [-3.19-0.74]



Table 5.5 Adjusted risk ratios of the association between feeling uncomfortable about smoking and risk of quit attempts within the last year, 2008-2012 ITC Mexico, Uruguay Survey

Adjusted Risk ratios (95% CI)						
Quit attempts	Mexico (n= 3884)			Uruguay (n=1517)		
Variables	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
<b>Feeling uncomfortable</b>						
Yes	1.31 [1.09-1.57]	1.28 [1.06-1.54]	1.15 [0.94-1.40]	1.84 [1.33-2.56]	1.95 [1.41-2.70]	1.73 [1.25-2.39]
No	1	1	1	1	1	1
<b>Income (quartile)</b>						
1		1.13 [0.80-1.58]	1.09 [0.78-1.53]		1.55 [0.94-2.55]	1.68 [1.02-2.77]
2		0.93 [0.67-1.30]	0.94 [0.68-1.31]		1.13 [0.74-1.73]	1.19 [0.78-1.80]
3		0.77 [0.56-1.04]	0.76 [0.56-1.03]		0.96 [0.56-1.64]	0.96 [0.55-1.68]
4		1	1		1	1
Don't know		0.64 [0.41-1.01]	0.65 [0.42-1.01]		0.69 [0.35-1.37]	0.78 [0.40-1.52]
<b>Education</b>						
No school or primary		0.73 [0.51-1.06]	0.76 [0.52-1.10]		0.94 [0.54-1.64]	0.88 [0.50-1.54]
Middle school		0.94 [0.66-1.33]	0.97 [0.68-1.37]		0.91 [0.54-1.53]	0.85 [0.51-1.43]
High school, incomplete university		0.91 [0.64-1.3]	0.92 [0.64-1.32]		1.31 [0.81-2.13]	1.26 [0.77-2.05]
University graduate		1	1		1	1
<b>Age</b>		1.00 [0.99-1.01]	1.00 [0.99-1.01]		0.99 [0.98-1.00]	0.99 [0.98-1.00]
<b>Sex</b>						
Male		1	1		1	1
Female		1 [0.82-1.22]	0.97 [0.79-1.19]		1.04 [0.75-1.43]	0.99 [0.71-1.39]
<b>Addiction (Mexico)</b>						
non-daily		1	1		1	
less than 5		0.63 [0.50-0.80]	0.63 [0.50-0.80]			
5 to 10		0.41 [0.32-0.52]	0.42 [0.33-0.54]			

More than 10	0.44 [0.32-0.60]	0.44 [0.32-0.60]		
<b>Addiction (Uruguay)</b>			0.79 [0.72-0.86]	0.78 [0.72-0.85]
<b>Societal Norms</b>				
Disagree or neutral		1		1
Agree		1.07 [0.89-1.29]		1.28 [0.94-1.75]
Strongly agree		1.20 [0.84-1.71]		1.42 [0.81-2.50]
<b>Close social network norms</b>				
Disagree or neutral		1		1
Agree		1.19 [0.90-1.57]		1.64 [1.05-2.57]
Strongly agree		1.88 [1.36-2.59]		2.55 [1.56-4.17]

Table 5.6 Adjusted risk ratios of the association between perceiving a negative stereotype of smokers and risk of quit attempts within the last year, 2008-2012 ITC Mexico, Uruguay Survey

Adjusted risk ratios (95% CI)						
Quit attempts						
Variables	Mexico (n= 3884)			Uruguay (n=1402)		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
<b>Negative stereotype</b>						
Yes	1.45 [1.15-1.83]	1.44 [1.14-1.83]	1.33 [1.04-1.70]	1.55 [0.87-2.76]	1.81 [1.00-3.28]	1.55 [0.83-2.90]
No	1	1	1	1	1	1
<b>Income (quartile)</b>						
1		1.12 [0.80-1.57]	1.09 [0.77-1.53]		1.47 [0.89-2.41]	1.61 [0.98-2.66]
2		0.92 [0.66-1.27]	0.94 [0.67-1.30]		1.02 [0.68-1.53]	1.09 [0.73-1.64]
3		0.76 [0.56-1.03]	0.76 [0.56-1.03]		0.99 [0.58-1.67]	0.97 [0.56-1.70]
4		1	1		1	1
Don't know		0.62 [0.40-0.97]	0.64 [0.41-0.98]		0.68 [0.34-1.37]	0.76 [0.39-1.50]
<b>Education</b>						

No school or primary	0.73 [0.51-1.06]	0.76 [0.52-1.10]	0.88 [0.51-1.52]	0.81 [0.46-1.42]
Middle school	0.95 [0.67-1.34]	0.97 [0.69-1.37]	0.84 [0.51-1.38]	0.78 [0.47-1.30]
High school, incomplete university	0.92 [0.65-1.31]	0.93 [0.65-1.32]	1.22 [0.76-1.96]	1.17 [0.72-1.90]
University graduate	1	1	1	1
<b>Age</b>	1 [0.99-1.01]	1 [0.99-1.01]	0.99 [0.98-1.00]	0.99 [0.98-1.00]
<b>Sex</b>				
Male	1	1	1	1
Female	1.01 [0.83-1.23]	0.97 [0.80-1.19]	1.02 [0.74-1.42]	0.98 [0.70-1.37]
<b>Addiction (Mexico)</b>				
non daily	1	1		
less than 5	0.63 [0.50-0.80]	0.63 [0.50-0.80]		
5 to 10	0.4 [0.32-0.52]	0.42 [0.32-0.53]		
More than 10	0.44 [0.32-0.60]	0.44 [0.32-0.60]		
<b>Addiction (Uruguay)</b>			0.79 [0.73-0.86]	0.78 [0.72-0.85]
<b>Societal Norms</b>				
Disagree or neutral		1		1
Agree		1.08 [0.90-1.29]		1.4 [1.02-1.92]
Strongly agree		1.21 [0.85-1.72]		1.6 [0.92-2.79]
<b>Close social network norms</b>				
Disagree or neutral		1		1
Agree		1.16 [0.87-1.54]		1.73 [1.10-2.71]
Strongly agree		1.86 [1.35-2.57]		2.67 [1.65-4.31]

Table 5.7 Adjusted risk ratios of the association between perceiving that smokers are marginalize and risk of quit attempts within the last year, 2008-2012 ITC Mexico, Uruguay Survey

Adjusted risk ratios (95% CI)						
Quit attempts						
Variables	Mexico (n= 3884)			Uruguay (n=1517)		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
<b>Marginalization</b>						
Yes	1.13 [0.95-1.35]	1.14 [0.95-1.37]	1.05 [0.86-1.27]	1.2 [0.88-1.63]	1.34 [0.98-1.85]	1.15 [0.83-1.6]
No	1	1	1	1	1	1
<b>Income (quartile)</b>						
1		1.12 [0.80-1.57]	1.08 [0.77-1.53]		1.44 [0.88-2.35]	1.6 [0.97-2.63]
2		0.91 [0.66-1.27]	0.93 [0.67-1.30]		1.03 [0.69-1.54]	1.1 [0.74-1.65]
3		0.75 [0.56-1.02]	0.75 [0.56-1.02]		0.98 [0.57-1.69]	0.97 [0.56-1.71]
4		1	1		1	1
Don't know		0.63 [0.40-0.99]	0.64 [0.41-1.00]		0.64 [0.33-1.26]	0.74 [0.38-1.43]
<b>Education</b>						
No school or primary		0.73 [0.50-1.05]	0.76 [0.52-1.10]		0.93 [0.54-1.61]	0.84 [0.48-1.47]
Middle school		0.94 [0.67-1.33]	0.97 [0.68-1.37]		0.89 [0.53-1.47]	0.81 [0.49-1.34]
High school, incomplete university		0.92 [0.65-1.3]	0.92 [0.65-1.32]		1.30 [0.81-2.10]	1.22 [0.75-1.98]
University graduate		1	1		1	1
<b>Age</b>						
		1.00 [0.99-1.01]	1.00 [0.99-1.01]		0.99 [0.98-1.00]	0.99 [0.98-1.00]
<b>Sex</b>						
Male		1	1		1	1
Female		1.02 [0.83-1.24]	0.98 [0.80-1.20]		1.02 [0.74-1.42]	0.98 [0.70-1.37]
<b>Addiction (Mexico)</b>						
non-daily less than 5		1	1			
		0.63 [0.50-0.80]	0.63 [0.50-0.80]			

5 to 10	0.41 [0.32-0.52]	0.42 [0.32-0.54]		
More than 10	0.44 [0.32-0.60]	0.44 [0.32-0.60]		
<b>Addiction (Uruguay)</b>			0.79 [0.73-0.86]	0.78 [0.72-0.85]
<b>Societal Norms</b>				
Disagree or neutral		1		1
Agree		1.1 [0.91-1.32]		1.39 [1.01-1.91]
Strongly agree		1.23 [0.86-1.76]		1.57 [0.91-2.73]
<b>Close social network norms</b>				
Disagree or neutral		1		1
Agree		1.21 [0.91-1.59]		1.75 [1.12-2.72]
Strongly agree		1.93 [1.4-2.65]		2.69 [1.66-4.36]

Table 5.8 Adjusted risk ratios of the association between feeling uncomfortable about smoking and successful quitting, 2008-2012 ITC Mexico

<b>Adjusted Risk ratios (95% CI)</b>			
<b>Successful quitting</b>			
<b>Variables</b>	<b>Mexico (n=1484)</b>		
	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>
<b>Feeling uncomfortable</b>			
Yes	1.24 [0.91-1.68]	1.28 [0.94-1.74]	1.25 [0.89-1.75]
No	1	1	1
<b>Income (quartile)</b>			
1		0.94 [0.60-1.49]	0.92 [0.58-1.44]
2		1.26 [0.81-1.97]	1.28 [0.83-1.98]
3		1.05 [0.66-1.67]	1.05 [0.67-1.65]
4		1	1
Don't know		0.64 [0.33-1.24]	0.66 [0.34-1.27]
<b>Education</b>			
No school or primary		1.05 [0.59-1.85]	1.01 [0.57-1.77]
Middle school		0.78 [0.45-1.36]	0.75 [0.44-1.28]
High school, incomplete university		0.68 [0.40-1.17]	0.66 [0.38-1.13]
University graduate		1	1
<b>Age</b>		0.99 [0.98-1.01]	1 [0.98-1.01]
<b>Sex</b>			
Male		1	1
Female		0.89 [0.65-1.22]	0.9 [0.66-1.22]
<b>Addiction (Mexico)</b>			
non-daily		1	1
less than 5		0.83 [0.59-1.17]	0.82 [0.58-1.17]
5 to 10		0.82 [0.54-1.23]	0.8 [0.54-1.20]
More than 10		0.40 [0.22-0.74]	0.39 [0.21-0.71]
<b>Addiction (Uruguay)</b>			
<b>Societal Norms</b>			
Disagree or neutral			1
Agree			1.09 [0.78-1.52]
Strongly agree			1.31 [0.77-2.23]
<b>Close social network norms</b>			
Disagree or neutral			1
Agree			1.28 [0.77-2.14]
Strongly agree			0.82 [0.46-1.46]

Table 5.9 Adjusted risk ratios of the association between perceiving a negative stereotype of smokers and successful quitting, 2008-2012 ITC Mexico, Uruguay Survey

Adjusted Risk ratios (95% CI)						
Successful quitting						
Variables	Mexico (n=1484)			Uruguay (n=836)		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
<b>Negative stereotype</b>						
Yes	1.30 [0.86-1.96]	1.33 [0.88-2.00]	1.25 [0.81-1.92]	0.46 [0.23-0.94]	0.51 [0.23-1.12]	0.50 [0.23-1.10]
No	1	1	1	1	1	1
<b>Income (quartile)</b>						
1		0.93 [0.59-1.47]	0.91 [0.58-1.43]		1.09 [0.56-2.10]	1.17 [0.61-2.26]
2		1.27 [0.82-1.97]	1.25 [0.81-1.93]		1.04 [0.59-1.82]	1.09 [0.61-1.93]
3		1.04 [0.66-1.64]	1.04 [0.66-1.63]		0.65 [0.35-1.23]	0.7 [0.36-1.33]
4		1	1		1	1
Don't know		0.63 [0.33-1.22]	0.64 [0.33-1.23]		1.15 [0.46-2.87]	1.31 [0.52-3.27]
<b>Education</b>						
No school or primary		1.02 [0.57-1.79]	1.00 [0.56-1.76]		0.43 [0.20-0.91]	0.45 [0.2-0.98]
Middle school		0.77 [0.45-1.33]	0.75 [0.44-1.28]		0.69 [0.36-1.30]	0.68 [0.35-1.32]
High school, incomplete university		0.68 [0.39-1.16]	0.66 [0.38-1.13]		0.61 [0.33-1.13]	0.61 [0.33-1.15]
University graduate		1	1		1	1
<b>Age</b>						
		1.00 [0.98-1.01]	1 [0.98-1.01]		1.01 [1-1.03]	1.01 [1.00-1.03]
<b>Sex</b>						
Male		1	1		1	1
Female		0.89 [0.65-1.22]	0.89 [0.65-1.22]		0.72 [0.46-1.11]	0.69 [0.45-1.07]
<b>Addiction (Mexico)</b>						
non-daily		1	1			
less than 5		0.83 [0.59-1.17]	0.82 [0.58-1.17]			
5 to 10		0.81 [0.55-1.22]	0.80 [0.53-1.18]			

More than 10	0.39 [0.21-0.73]	0.38 [0.21-0.70]		
<b>Addiction (Uruguay)</b>			0.77 [0.67-0.89]	0.77 [0.67-0.89]
<b>Societal Norms</b>				
Disagree or neutral		1		1
Agree		1.15 [0.83-1.59]		0.84 [0.51-1.37]
Strongly agree		1.37 [0.80-2.36]		0.76 [0.41-1.42]
<b>Close social network norms</b>				
Disagree or neutral		1		1
Agree		1.28 [0.76-2.14]		1.58 [0.73-3.42]
Strongly agree		0.84 [0.47-1.49]		2.15 [1.01-4.55]

Table 5.10 Adjusted risk ratios of the association between perceiving that smokers are marginalized and successful quitting, 2008-2012 ITC Mexico, Uruguay Survey

<b>Adjusted Risk ratios (95% CI)</b>						
<b>Successful quitting</b>						
<b>Variables</b>	<b>Mexico (n=1484)</b>			<b>Uruguay (n=836)</b>		
	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>
<b>Marginalization</b>						
Yes	1.42 [1.06-1.91]	1.44 [1.06-1.96]	1.40 [1.02-1.92]	1.41 [0.92-2.16]	1.39 [0.91-2.14]	1.45 [0.92-2.29]
No	1	1	1	1	1	1
<b>Income (quartile)</b>						
1		0.95 [0.60-1.49]	0.92 [0.59-1.45]		1.10 [0.58-2.09]	1.18 [0.61-2.25]
2		1.30 [0.84-2]	1.27 [0.82-1.97]		1.00 [0.57-1.75]	1.04 [0.59-1.85]
3		1.03 [0.65-1.63]	1.03 [0.65-1.62]		0.64 [0.34-1.21]	0.70 [0.36-1.35]
4		1	1		1	1
Don't know		0.64 [0.33-1.25]	0.65 [0.33-1.26]		1.18 [0.45-3.11]	1.36 [0.52-3.59]
<b>Education</b>						



No school or primary	1.00 [0.57-1.73]	0.98 [0.56-1.71]	0.43 [0.20-0.91]	0.45 [0.20-0.98]
Middle school	0.77 [0.46-1.30]	0.75 [0.44-1.26]	0.70 [0.37-1.33]	0.70 [0.36-1.37]
High school, incomplete university	0.67 [0.40-1.14]	0.65 [0.38-1.12]	0.62 [0.33-1.16]	0.62 [0.33-1.17]
University graduate	1	1	1	1
<b>Age</b>	0.99 [0.98-1.01]	0.99 [0.98-1.01]	1.01 [1-1.03]	1.01 [1-1.03]
<b>Sex</b>				
Male	1	1	1	1
Female	0.89 [0.65-1.21]	0.90 [0.66-1.22]	0.72 [0.47-1.11]	0.70 [0.45-1.08]
<b>Addiction (Mexico)</b>				
non daily	1	1		
less than 5	0.82 [0.58-1.16]	0.81 [0.57-1.16]		
5 to 10	0.82 [0.56-1.22]	0.80 [0.54-1.19]		
More than 10	0.40 [0.21-0.73]	0.38 [0.21-0.7]		
<b>Addiction (Uruguay)</b>			0.76 [0.66-0.87]	0.76 [0.66-0.87]
<b>Societal Norms</b>				
Disagree or neutral		1		1
Agree		1.09 [0.78-1.53]		0.78 [0.47-1.3]
Strongly agree		1.24 [0.73-2.11]		0.64 [0.34-1.22]
<b>Close social network norms</b>				
Disagree or neutral		1		1
Agree		1.29 [0.78-2.14]		1.47 [0.68-3.17]
Strongly agree		0.85 [0.48-1.49]		1.97 [0.93-4.15]

Table 5.11 Adjusted risk ratios of the association between feeling uncomfortable about smoking and relapse, 2008-2012 ITC Mexico

<b>Adjusted Risk ratios (95% CI)</b>			
<b>Relapse</b>			
<b>Variables</b>	<b>Mexico (n=596)</b>		
	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>
<b>Feeling uncomfortable</b>			
Yes	0.85 [0.53-1.38]	0.83 [0.51-1.36]	0.86 [0.5-1.48]
No	1	1	1
<b>Income (quartile)</b>			
1		0.90 [0.41-2.00]	1.01 [0.46-2.24]
2		1.23 [0.56-2.71]	1.34 [0.61-2.95]
3		1.08 [0.50-2.31]	1.09 [0.50-2.35]
4		1	1
Don't know		1.14 [0.37-3.55]	1.33 [0.41-4.26]
<b>Education</b>			
No school or primary		1.15 [0.45-2.92]	1.12 [0.43-2.93]
Middle school		2.13 [0.89-5.07]	2.14 [0.88-5.18]
High school, incomplete university		1.34 [0.59-3.02]	1.4 [0.60-3.25]
University graduate		1	1
<b>Age</b>		0.97 [0.96-0.99]	0.97 [0.95-0.99]
<b>Sex</b>			
Male		1	1
Female		0.99 [0.60-1.64]	1.1 [0.67-1.82]
<b>Societal Norms</b>			
Disagree or neutral			1
Agree			1.09 [0.60-1.97]
Strongly agree			1.12 [0.53-2.35]
<b>Close social network norms</b>			
Disagree or neutral			1
Agree			0.7 [0.34-1.44]
Strongly agree			0.31 [0.14-0.68]

Table 5.12 Adjusted risk ratios of the association between perceiving a negative stereotype of smokers and relapse, 2008-2012 ITC Mexico

<b>Adjusted Risk ratios (95% CI)</b>			
<b>Relapse</b>			
<b>Variables</b>	<b>Mexico (n=596)</b>		
	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>
<b>Negative stereotype</b>			
Yes	0.50 [0.26-0.94]	0.44 [0.23-0.85]	0.48 [0.23-1.00]
No	1	1	1
<b>Income (quartile)</b>			
1		0.92 [0.41-2.02]	1 [0.45-2.20]
2		1.35 [0.62-2.93]	1.41 [0.65-3.05]
3		1.17 [0.56-2.44]	1.13 [0.53-2.41]
4		1	1
Don't know		1.29 [0.42-3.96]	1.42 [0.45-4.52]
<b>Education</b>			
No school or primary		1.18 [0.46-2.99]	1.16 [0.44-3.06]
Middle school		2.13 [0.88-5.16]	2.15 [0.86-5.38]
High school, incomplete university		1.35 [0.58-3.14]	1.41 [0.59-3.39]
University graduate		1	1
<b>Age</b>		0.97 [0.96-0.99]	0.97 [0.95-0.99]
<b>Sex</b>			
Male		1	1
Female		1.05 [0.62-1.76]	1.16 [0.69-1.94]
<b>Societal Norms</b>			
Disagree or neutral			1
Agree			1.14 [0.65-2.00]
Strongly agree			1.06 [0.53-2.10]
<b>Close social network norms</b>			
Disagree or neutral			1
Agree			0.76 [0.36-1.58]
Strongly agree			0.35 [0.16-0.79]

Table 5.13 Adjusted risk ratios of the association between perceiving that smokers are marginalized and relapse, 2008-2012 ITC Mexico

<b>Adjusted Risk ratios (95% CI)</b>			
<b>Relapse</b>			
<b>Variables</b>	<b>Mexico (n=)</b>		
	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>
<b>Marginalization</b>			
Yes	0.68 [0.43-1.09]	0.67 [0.41-1.07]	0.65 [0.38-1.08]
No	1	1	1

<b>Income (quartile)</b>		
1	0.91 [0.41-2.01]	0.99 [0.45-2.19]
2	1.22 [0.54-2.71]	1.29 [0.58-2.89]
3	1.09 [0.51-2.34]	1.09 [0.51-2.33]
4	1	1
Don't know	1.14 [0.36-3.60]	1.33 [0.40-4.38]
<b>Education</b>		
No school or primary	1.21 [0.48-3.07]	1.20 [0.46-3.10]
Middle school	2.16 [0.90-5.18]	2.17 [0.88-5.31]
High school, incomplete university	1.33 [0.59-3.01]	1.38 [0.59-3.22]
University graduate	1	1
<b>Age</b>	0.97 [0.96-0.99]	0.97 [0.95-0.99]
<b>Sex</b>		
Male	1	1
Female	0.99 [0.60-1.64]	1.10 [0.66-1.81]
<b>Societal Norms</b>		
Disagree or neutral		1
Agree		1.22 [0.67-2.21]
Strongly agree		1.26 [0.59-2.66]
<b>Close social network norms</b>		
Disagree or neutral		1
Agree		0.73 [0.35-1.51]
Strongly agree		0.32 [0.15-0.71]

## CHAPTER 6 : SUMMARY

The purpose of this dissertation was to understand the role of social norms, SES and tobacco control policies (i.e., smoke-free policy and HWLs) in the formation of smoking-related stigma. In addition, we evaluated the role of nicotine dependence as an effect modifier of these relationships. Furthermore, we examined how smoking-related stigma was associated with smoking consumption and cessation in Mexico and Uruguay. These relationships were examined using data from population-based, longitudinal surveys of adult smokers in Mexico and Uruguay, between 2008 and 2012 (Chapter 3-Chapter 5).

In Chapter 3, we examined the association between social norms or SES and smoking-related stigma in Mexico and Uruguay. Strong anti-smoking injunctive norms (i.e., close social network and societal norms) were consistently associated with higher levels of all indicators of perceived stigma in Mexico and Uruguay. Although descriptive norms were not generally associated with any of the three aspects of smoking-related stigma, in Uruguay, smokers with more smoking friends were less likely to perceive that smokers were marginalized. Nicotine dependence modified some of these relationships. In Uruguay, smokers who perceived weaker anti-smoking societal norms and had higher levels of nicotine dependence were more likely to perceive a negative stereotype of smokers, compared to smokers who perceived weaker anti-smoking norms and had lower nicotine dependence. Furthermore, we found that Mexican smokers with fewer smoking

friends and higher levels of nicotine dependence were more likely to feel uncomfortable about smoking, compared to smokers with fewer smoking friends and lower levels of nicotine dependence.

The association between SES and smoking-related stigma provided an interesting contrast between countries. While Mexican smokers with lower education and lower income were less likely to perceive a negative stereotype of smokers, Uruguayan smokers with lower education and lower income were more likely to perceive a negative stereotype of smokers. In addition, although nicotine dependence did not appear to modify the association between SES and smoking-related stigma in Mexico, nicotine dependence was an important effect modifier in the association between SES and stigma in Uruguay. Uruguayan smokers with high income or high education and high nicotine dependence were more likely to perceive that smokers were marginalized compared to those with high income or high education and low nicotine dependence.

In Chapter 4, we evaluated the association between tobacco control policies (i.e., HWLs and smoke-free policies) and smoking-related stigma in Mexico and Uruguay. We found that greater perceived attention to HWLs on cigarette packages was associated with more smoking-related stigma (i.e., feeling uncomfortable, perception of a negative stereotype of smokers and perception that smokers are marginalized) in both Mexico and Uruguay. There was more variation when considering smoke-free policies and stigma. While Mexican smokers exposed to SHS in enclosed working areas were more likely to feel stigmatized (feeling uncomfortable) compared to smokers not exposed to SHS in enclosed working areas, Uruguayan smokers exposed to SHS in enclosed working areas were less likely to feel stigmatized (perceiving a negative stereotype). Exposure to SHS

in restaurants/cafes or bars was not significantly associated with smoking-related stigma in our study. Furthermore, nicotine dependence was not an important effect modifier in any of these associations.

In Chapter 5, we studied the relationship between smoking-related stigma and smoking intensity (change in cigarette consumption from one wave to the next) and cessation behavior (quit attempts, successful quitting and relapse) in Mexico and Uruguay. The association between smoking-related stigma and change in cigarette consumption (from one survey wave to the next) in either country. Smoking-related stigma (i.e., feeling uncomfortable, negative stereotype) was associated with a higher likelihood of making a quit attempt in both Mexico and Uruguay. Smoking-related stigma was also associated with a higher likelihood of successful quitting among Mexican participants who perceived that smokers were marginalized. However, it is possible that once smoking-related-stigma is internalized by smokers, it may function as a damaging force, as smoking-related stigma in the previous wave was associated with less successful quitting in Mexico in the current wave. Smoking-related stigma (negative stereotype) was associated with less relapse among Mexican respondents.

### **Policy implications and future research**

This dissertation highlights the importance of recognizing smoking-related stigma as an important factor to be considered when developing the next generation of tobacco control policies or smoking cessation programs. This is of particular importance in present times, when tobacco control policies have denormalized tobacco use in many parts of the world. This dissertation suggests that the denormalization of smoking, through tobacco control policies (i.e., HWLs) and strong anti-smoking norms, may also

function to increase smoking-related stigma. Furthermore, although our findings suggest that smoking-related stigma may increase smoking cessation, it is possible that internalized forms of smoking related-stigma may have counterproductive effects on smoking cessation. Thus, we caution policymakers as well as public health organizations against the use of smoking-related stigma in policy and anti-tobacco campaigns. Furthermore, it is important to consider the ethical implications of using smoking-related stigma as a means to reduce smoking consumption and increase smoking cessation outcomes, especially if one considers the small amount of research in this area.

Future research in this area should focus on developing a set of consistent measures that capture the whole experience of smoking-related stigma proposed by Link and Phelan (19). Furthermore, futures studies should evaluate the use of internalized measures of smoking-related stigma such as those from the Internalized Stigma of Smoking Inventory proposed in a previous study.

In addition, research should focus on developing tobacco control policies and campaigns that are not promoting stigma and shame among smokers but that instead rely on more positive strategies to reduce smoking behavior and promote smoking cessation, such as increasing the self-efficacy of smokers.



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## APPENDIX A – EXTENDED TABLES FOR AIM 1

**Table A.1.** Sensitivity analysis for the association between lagged close social network norms and feeling uncomfortable, 2008-2012 ITC Mexico, Uruguay Survey

<b>Adjusted Risk ratios(95% CI)</b>				
<b>Feeling uncomfortable</b>				
<b>Variables</b>	<b>Mexico (n=)</b>		<b>Uruguay (n=)</b>	
	<b>Unadjusted</b>	<b>Adjusted</b>	<b>Unadjusted</b>	<b>Adjusted</b>
<b>Close social network norms</b>				
<b>Norms</b>				
Disagree or neutral	1	1	1	1
Agree	1.32 [1.07-1.64]	1.34 [1.08-1.66]	1.48 [0.93-2.36]	1.36 [0.84-2.2]
Strongly agree	1.42 [1.1-1.82]	1.39 [1.08-1.79]	1.59 [0.99-2.52]	1.46 [0.91-2.36]
<b>Income (quartile)</b>				
1		0.98 [0.72-1.33]		0.78 [0.44-1.39]
2		0.81 [0.61-1.08]		0.64 [0.41-1]
3		0.83 [0.62-1.12]		1.63 [0.97-2.72]
4		1		1
Don't know		0.8 [0.53-1.19]		1.02 [0.49-2.12]
<b>Education</b>				
No school/ primary		1.06 [0.75-1.49]		0.65 [0.36-1.16]
Middle school		1.15 [0.84-1.59]		0.57 [0.34-0.96]
High school		1.18 [0.87-1.61]		0.71 [0.43-1.16]
University graduate		1		1
<b>Age</b>				
		1 [0.99-1.01]		1 [0.98-1.01]
<b>Sex</b>				
Male		1		1
Female		1.28 [1.06-1.54]		0.93 [0.66-1.32]
<b>Addiction (Mexico)</b>				
non-daily		1		
less than 5		0.97 [0.77-1.22]		
5 to 10		0.8 [0.63-1.02]		
More than 10		1.02 [0.73-1.42]		
<b>Addiction (Uruguay)</b>				
				1.09 [0.98-1.21]
<b>Smoking status</b>				
Every day				1.1 [0.63-1.9]
Less than everyday				1

**Table A.2.** Sensitivity analysis for the association between lagged societal norms and feeling uncomfortable about smoking, 2008-2012 ITC Mexico, Uruguay Survey

<b>Adjusted Risk ratios (95% CI)</b>				
<b>Feeling uncomfortable</b>				
<b>Variables</b>	<b>Mexico (n=)</b>		<b>Uruguay (n=)</b>	
	<b>Unadjusted</b>	<b>Adjusted</b>	<b>Unadjusted</b>	<b>Adjusted</b>
<b>Societal Norms</b>				
<b>Norms</b>				
Disagree or neutral	1	1	1	1
Agree	1.27 [1.05-1.52]	1.26 [1.05-1.52]	1.4 [1-1.97]	1.48 [1.06-2.06]
Strongly agree	1.33 [0.98-1.82]	1.31 [0.98-1.77]	1.6 [0.92-2.78]	1.63 [0.9-2.94]
<b>Income (quartile)</b>				
1		1 [0.73-1.35]		0.73 [0.41-1.3]
2		0.82 [0.62-1.1]		0.6 [0.38-0.93]
3		0.83 [0.62-1.12]		1.54 [0.94-2.53]
4		1		1
Don't know		0.8 [0.53-1.19]		0.99 [0.46-2.12]
<b>Education</b>				
No school or primary		1.05 [0.74-1.48]		0.62 [0.34-1.12]
Middle school		1.15 [0.83-1.59]		0.56 [0.34-0.94]
High school, incomplete university		1.19 [0.87-1.63]		0.69 [0.42-1.13]
University graduate		1		1
<b>Age</b>		1 [0.99-1.01]		1 [0.98-1.01]
<b>Sex</b>				
Male		1		1
Female		1.27 [1.06-1.54]		0.93 [0.66-1.32]
<b>Addiction (Mexico)</b>				
non-daily		1		
less than 5		0.96 [0.76-1.21]		
5 to 10		0.79 [0.62-1]		
More than 10		1.01 [0.72-1.4]		
<b>Addiction (Uruguay)</b>				1.07 [0.97-1.19]
<b>Smoking status</b>				
Every day				1.11 [0.63-1.93]
Less than everyday				1

**Table A.3.** Sensitivity analysis for the association between lagged friend norms and feeling uncomfortable about smoking, 2008-2012 ITC Mexico, Uruguay Survey

<b>Adjusted Risk ratios (95% CI)</b>				
<b>Feeling uncomfortable</b>				
<b>Variables</b>	<b>Mexico (n=)</b>		<b>Uruguay (n=)</b>	
	<b>Unadjusted</b>	<b>Adjusted</b>	<b>Unadjusted</b>	<b>Adjusted</b>
<b>Friend norms</b>				
<b>Friend norms</b>	1.03 [0.98-1.09]	1.05 [1-1.11]	0.94 [0.84-1.04]	0.94 [0.85-1.05]
<b>Income (quartile)</b>				
1		0.99 [0.73-1.34]		0.75 [0.42-1.34]
2		0.81 [0.61-1.08]		0.62 [0.4-0.97]
3		0.83 [0.62-1.12]		1.63 [0.97-2.73]
4		1		1
Don't know		0.8 [0.53-1.19]		1.03 [0.49-2.18]
<b>Education</b>				
No school or primary		1.05 [0.74-1.49]		0.69 [0.38-1.23]
Middle school		1.14 [0.83-1.58]		0.6 [0.35-1.01]
High school, incomplete university		1.18 [0.86-1.62]		0.74 [0.45-1.21]
University graduate		1		1
<b>Age</b>		1 [0.99-1.01]		1 [0.98-1.01]
<b>Sex</b>				
Male		1		1
Female		1.3 [1.07-1.57]		0.93 [0.65-1.32]
<b>Addiction (Mexico)</b>				
non-daily		1		
less than 5		0.97 [0.76-1.22]		
5 to 10		0.78 [0.62-0.99]		
More than 10		1 [0.72-1.39]		
<b>Addiction (Uruguay)</b>				
				1.09 [0.98-1.2]
<b>Smoking status</b>				
Every day				1.1 [0.63-1.93]
Less than everyday				1

**Table A.4.** Sensitivity analysis for the association between lagged close social network norms and perceiving a negative stereotype of smokers, 2008-2012 ITC Mexico, Uruguay Survey

<b>Adjusted Risk ratios (95% CI)</b>				
<b>Negative stereotypes of smokers</b>				
<b>Variables</b>	<b>Mexico (n=)</b>		<b>Uruguay (n=)</b>	
	<b>Unadjusted</b>	<b>Adjusted</b>	<b>Unadjusted</b>	<b>Adjusted</b>
<b>Close social network norms</b>				
<b>Norms</b>				
Disagree or neutral	1	1	1	1
Agree	1.22 [0.92-1.63]	1.24 [0.93-1.66]	2.44 [1.02-5.85]	2.85 [1.18-6.87]
Strongly agree	1.06 [0.77-1.44]	1.07 [0.79-1.46]	1.72 [0.66-4.44]	1.85 [0.74-4.64]
<b>Income (quartile)</b>				
1		0.99 [0.67-1.48]		0.97 [0.36-2.58]
2		0.93 [0.64-1.35]		2.81 [1.16-6.8]
3		0.86 [0.59-1.24]		1.21 [0.51-2.9]
4		1		1
Don't know		1.49 [0.79-2.81]		1.22 [0.37-3.99]
<b>Education</b>				
No school or primary		0.88 [0.55-1.41]		2.9 [0.87-9.69]
Middle school		0.86 [0.55-1.35]		1.43 [0.66-3.09]
High school, incomplete university		0.78 [0.5-1.22]		2.14 [0.99-4.63]
University graduate		1		1
<b>Age</b>		1 [0.99-1.01]		1.02 [0.99-1.04]
<b>Sex</b>		1		
Male		1.1 [0.86-1.39]		1
Female				1 [0.53-1.9]
<b>Addiction (Mexico)</b>				
non-daily		1.05 [0.77-1.45]		
less than 5		1.06 [0.8-1.41]		
5 to 10		1.29 [0.87-1.92]		
More than 10				
<b>Addiction (Uruguay)</b>				1.17 [0.97-1.4]
<b>Smoking status</b>				
Every day				1.45 [0.6-3.52]
Less than everyday				1

**Table A.5.** Sensitivity analysis for the association between lagged societal norms and perceiving a negative stereotype of smokers, 2008-2012 ITC Mexico, Uruguay Survey

<b>Adjusted Risk ratios (95% CI)</b>				
<b>Negative stereotypes of smokers</b>				
<b>Variables</b>	<b>Mexico (n=)</b>		<b>Uruguay (n=)</b>	
	<b>Unadjusted</b>	<b>Adjusted</b>	<b>Unadjusted</b>	<b>Adjusted</b>
<b>Societal Norms</b>				
<b>Norms</b>				
Disagree or neutral	1	1	1	1
Agree	1.2 [0.93-1.56]	1.21 [0.93-1.57]	2.09 [1.11-3.92]	1.73 [0.89-3.39]
Strongly agree	1.37 [0.98-1.93]	1.39 [1-1.94]	0.81 [0.33-2.01]	0.77 [0.32-1.86]
<b>Income (quartile)</b>				
1		1.01 [0.68-1.5]		0.88 [0.35-2.18]
2		0.95 [0.66-1.37]		2.39 [0.99-5.75]
3		0.86 [0.59-1.25]		1.21 [0.49-3]
4		1		1
Don't know		1.5 [0.79-2.82]		1.3 [0.4-4.27]
<b>Education</b>				
No school or primary		0.89 [0.55-1.43]		2.88 [0.84-9.84]
Middle school		0.86 [0.54-1.35]		1.39 [0.63-3.02]
High school, incomplete university		0.79 [0.5-1.23]		2.08 [0.95-4.52]
University graduate		1		1
<b>Age</b>		1 [0.99-1.01]		1.02 [0.99-1.04]
<b>Sex</b>				
Male		1		1
Female		1.09 [0.86-1.39]		1.42 [0.54-3.66]
<b>Addiction (Mexico)</b>				
non-daily		1		
less than 5		1.05 [0.76-1.44]		
5 to 10		1.06 [0.8-1.4]		
More than 10		1.3 [0.88-1.93]		
<b>Addiction (Uruguay)</b>				1.14 [0.95-1.36]
<b>Smoking status</b>				
Every day				1.42 [0.54-3.66]
Less than everyday				1

**Table A.6.** Sensitivity analysis for the association between lagged friend norms and perceiving a negative stereotype of smokers, 2008-2012 ITC Mexico, Uruguay Survey

**Adjusted Risk ratios (95% CI)**

**Negative stereotypes of smokers**

Variables	Mexico (n=)		Uruguay (n=)	
	Unadjusted	Adjusted	Unadjusted	Adjusted
<b>Friend norms</b>				
<b>Friend norms</b>	1.01 [0.95-1.09]	1.03 [0.96-1.11]	0.93 [0.79-1.11]	0.92 [0.78-1.08]
<b>Income (quartile)</b>				
1		1 [0.67-1.48]		0.86 [0.32-2.27]
2		0.94 [0.65-1.36]		2.5 [1.05-5.96]
3		0.86 [0.59-1.25]		1.21 [0.5-2.95]
4		1		1
Don't know		1.5 [0.79-2.84]		1.3 [0.4-4.16]
<b>Education</b>				
No school or primary		0.89 [0.55-1.42]		3.21 [1.01-10.15]
Middle school		0.86 [0.54-1.35]		1.48 [0.68-3.22]
High school, incomplete university		0.78 [0.5-1.23]		2.17 [1.01-4.66]
University graduate		1		1
<b>Age</b>				
		1 [0.99-1.01]		1.02 [0.99-1.04]
<b>Sex</b>				
Male		1		1
Female		1.11 [0.87-1.4]		0.99 [0.52-1.87]
<b>Addiction (Mexico)</b>				
non-daily		1		
less than 5		1.06 [0.77-1.45]		
5 to 10		1.05 [0.79-1.4]		
More than 10		1.29 [0.87-1.91]		
<b>Addiction (Uruguay)</b>				
				1.16 [0.97-1.39]
<b>Smoking status</b>				
Every day				1.37 [0.53-3.5]
Less than everyday				1

**Table A.7.** Sensitivity analysis for the association between lagged close social network norms and perceiving that smokers are marginalized, 2008-2012 ITC Mexico, Uruguay Survey

<b>Adjusted Risk ratios (95% CI)</b>				
<b>Perceived marginalization of smokers</b>				
<b>Variables</b>	<b>Mexico (n=)</b>		<b>Uruguay (n=)</b>	
	<b>Unadjusted</b>	<b>Adjusted</b>	<b>Unadjusted</b>	<b>Adjusted</b>
<b>Close social network norms</b>				
<b>Norms</b>				
Disagree or neutral	1	1	1	1
Agree	1.06 [0.85-1.33]	1.07 [0.85-1.34]	1.48 [0.96-2.27]	1.48 [0.97-2.27]
Strongly agree	1.12 [0.86-1.45]	1.13 [0.87-1.47]	1.41 [0.89-2.26]	1.42 [0.89-2.27]
<b>Income (quartile)</b>				
1		0.89 [0.67-1.2]		1.44 [0.84-2.47]
2		1.01 [0.77-1.34]		1.31 [0.85-2.02]
3		0.92 [0.7-1.22]		1.33 [0.79-2.23]
4		1		1
Don't know		0.81 [0.56-1.18]		1.96 [0.93-4.13]
<b>Education</b>				
No school or primary		1.27 [0.9-1.8]		0.63 [0.36-1.12]
Middle school		1.21 [0.87-1.68]		0.55 [0.33-0.89]
High school, incomplete university		1.22 [0.88-1.68]		0.61 [0.37-1.01]
University graduate		1		1
<b>Age</b>		1.01 [1-1.01]		1.01 [1-1.02]
<b>Sex</b>				
Male		1		1
Female		0.94 [0.78-1.12]		1 [0.72-1.39]
<b>Addiction (Mexico)</b>				
non-daily		1		
less than 5		1.26 [1-1.59]		
5 to 10		1 [0.8-1.26]		
More than 10		1.39 [1.03-1.88]		
<b>Addiction (Uruguay)</b>				1.12 [1.02-1.24]
<b>Smoking status</b>				
Every day				0.67 [0.38-1.16]
Less than everyday				1



**Table A.8.** Sensitivity analysis for the association between lagged societal norms and perceiving that smokers are marginalized, 2008-2012 ITC Mexico, Uruguay Survey

<b>Adjusted Risk ratios (95% CI)</b>				
<b>Perceived marginalization of smokers</b>				
<b>Variables</b>	<b>Mexico (n=)</b>		<b>Uruguay (n=)</b>	
	<b>Unadjusted</b>	<b>Adjusted</b>	<b>Unadjusted</b>	<b>Adjusted</b>
<b>Societal Norms</b>				
<b>Norms</b>				
Disagree or neutral	1	1	1	1
Agree	1.26 [1.05-1.51]	1.25 [1.04-1.51]	1.61 [1.18-2.2]	1.56 [1.13-2.15]
Strongly agree	1.4 [1.04-1.88]	1.36 [1.02-1.82]	1.83 [1.05-3.17]	1.85 [1.03-3.31]
<b>Income (quartile)</b>				
1		0.91 [0.68-1.21]		1.33 [0.77-2.29]
2		1.03 [0.78-1.36]		1.22 [0.8-1.87]
3		0.92 [0.7-1.21]		1.23 [0.76-2.01]
4		1		1
Don't know		0.81 [0.56-1.18]		1.93 [0.9-4.14]
<b>Education</b>				
No school or primary		1.26 [0.89-1.78]		0.6 [0.34-1.06]
Middle school		1.2 [0.87-1.67]		0.53 [0.33-0.84]
High school, incomplete university		1.22 [0.89-1.68]		0.58 [0.35-0.95]
University graduate		1		1
<b>Age</b>		1.01 [1-1.01]		1.01 [1-1.02]
<b>Sex</b>				
Male		1		1
Female		0.93 [0.78-1.12]		0.99 [0.71-1.37]
<b>Addiction (Mexico)</b>				
non-daily		1		
less than 5		1.24 [0.99-1.57]		
5 to 10		0.99 [0.79-1.24]		
More than 10		1.39 [1.03-1.86]		
<b>Addiction (Uruguay)</b>				1.11 [1.01-1.22]
<b>Smoking status</b>				
Every day				0.66 [0.39-1.13]
Less than everyday				1

**Table A.9.** Sensitivity analysis for the association between lagged friend norms and perceiving that smokers are marginalized, 2008-2012 ITC Mexico, Uruguay Survey

<b>Adjusted Risk ratios (95% CI)</b>				
<b>Perceived marginalization of smokers</b>				
<b>Variables</b>	<b>Mexico (n=)</b>		<b>Uruguay (n=)</b>	
	<b>Unadjusted</b>	<b>Adjusted</b>	<b>Unadjusted</b>	<b>Adjusted</b>
<b>Friend norms</b>				
<b>Friend norms</b>	0.98 [0.93-1.03]	1 [0.95-1.06]	0.98 [0.9-1.08]	1.01 [0.91-1.11]
<b>Income (quartile)</b>				
1		0.9 [0.67-1.2]		1.4 [0.82-2.37]
2		1.01 [0.77-1.34]		1.27 [0.82-1.96]
3		0.92 [0.7-1.21]		1.33 [0.79-2.24]
4		1		1
Don't know		0.81 [0.56-1.18]		1.96 [0.92-4.14]
<b>Education</b>				
No school or primary		1.27 [0.9-1.79]		0.63 [0.35-1.11]
Middle school		1.21 [0.87-1.68]		0.54 [0.33-0.87]
High school, incomplete university		1.22 [0.88-1.69]		0.61 [0.37-1.02]
University graduate		1		1
<b>Age</b>		1.01 [1-1.01]		1.01 [1-1.02]
<b>Sex</b>				
Male		1		1
Female		0.94 [0.78-1.13]		1 [0.72-1.39]
<b>Addiction (Mexico)</b>				
non-daily		1		
less than 5		1.26 [1-1.58]		
5 to 10		1 [0.79-1.25]		
More than 10		1.38 [1.03-1.86]		
<b>Addiction (Uruguay)</b>				1.12 [1.01-1.23]
<b>Smoking status</b>				
Every day				0.68 [0.39-1.18]
Less than everyday				1

**Table A.10.** Sensitivity analysis for the association between lagged income and feeling uncomfortable about smoking, 2008-2012 ITC Mexico, Uruguay Survey

<b>Adjusted Risk ratios (95% CI)</b>				
<b>Feeling uncomfortable</b>				
<b>Variables</b>	<b>Mexico (n=)</b>		<b>Uruguay (n=)</b>	
	<b>Unadjusted</b>	<b>Adjusted</b>	<b>Unadjusted</b>	<b>Adjusted</b>
<b>Income</b>				
<b>Income (quartile)</b>				
1	1.14 [0.86-1.5]	1.14 [0.87-1.51]	0.88 [0.55-1.4]	0.88 [0.54-1.43]
2	0.99 [0.76-1.3]	1.02 [0.77-1.34]	0.79 [0.52-1.2]	0.8 [0.52-1.23]
3	1.41 [1.07-1.87]	1.45 [1.1-1.93]	1.02 [0.64-1.62]	1.03 [0.64-1.65]
4	1	1	1	1
Don't know	1.15 [0.8-1.66]	1.17 [0.8-1.69]	0.91 [0.48-1.73]	0.92 [0.49-1.74]
<b>Age</b>		1 [0.99-1]		1 [0.99-1.01]
<b>Sex</b>				
Male		1		1
Female		1.28 [1.06-1.55]		0.91 [0.66-1.27]
<b>Addiction (Mexico)</b>				
non-daily		1		
less than 5		0.93 [0.74-1.17]		
5 to 10		0.76 [0.6-0.95]		
More than 10		0.97 [0.7-1.33]		
<b>Addiction (Uruguay)</b>				1.05 [0.95-1.16]
<b>Smoking status</b>				
Every day				1.1 [0.65-1.87]
Less than everyday				1

**Table A.11.** Sensitivity analysis for the association between lagged income and perceiving a negative stereotype of smokers, 2008-2012 ITC Mexico, Uruguay Survey

<b>Adjusted Risk ratios (95% CI)</b>				
<b>Negative stereotypes of smokers</b>				
<b>Variables</b>	<b>Mexico (n=)</b>		<b>Uruguay (n=)</b>	
	<b>Unadjusted</b>	<b>Adjusted</b>	<b>Unadjusted</b>	<b>Adjusted</b>
<b>Income</b>				
<b>Income (quartile)</b>				
1	0.89 [0.62-1.29]	0.89 [0.62-1.28]	1.61 [0.63-4.09]	1.59 [0.6-4.21]
2	0.81 [0.57-1.15]	0.83 [0.58-1.17]	1.36 [0.62-2.97]	1.44 [0.64-3.21]
3	0.95 [0.65-1.38]	0.95 [0.64-1.39]	1.91 [0.9-4.04]	2.01 [0.91-4.42]
4	1	1	1	1
Don't know	1.13 [0.66-1.93]	1.06 [0.62-1.82]	2.16 [0.89-5.24]	2.18 [0.87-5.41]
<b>Age</b>		1 [0.99-1.01]		1.02 [0.99-1.04]
<b>Sex</b>				
Male		1		1

Female	1.08 [0.85-1.36]	0.92 [0.51-1.64]
<b>Addiction (Mexico)</b>		
non-daily	1	
less than 5	1.08 [0.79-1.48]	
5 to 10	1.04 [0.79-1.37]	
More than 10	1.18 [0.81-1.73]	
<b>Addiction (Uruguay)</b>		1.22 [1.02-1.46]
<b>Smoking status</b>		
Every day		1.36 [0.53-3.44]
Less than everyday		1

**Table A.12.** Sensitivity analysis for the association between lagged income and perceiving that smokers are marginalized, 2008-2012 ITC Mexico, Uruguay Survey

<b>Adjusted Risk ratios (95% CI)</b>				
<b>Feeling marginalized</b>				
<b>Variables</b>	<b>Mexico (n=)</b>		<b>Uruguay (n=)</b>	
	<b>Unadjusted</b>	<b>Adjusted</b>	<b>Unadjusted</b>	<b>Adjusted</b>
<b>Income</b>				
<b>Income (quartile)</b>				
1	1.15 [0.88-1.51]	1.12 [0.85-1.48]	1.55 [1-2.43]	1.51 [0.95-2.4]
2	1.04 [0.8-1.36]	1.04 [0.79-1.36]	1.06 [0.72-1.56]	1.06 [0.72-1.56]
3	1.52 [1.15-2.02]	1.51 [1.14-2.01]	0.81 [0.5-1.29]	0.8 [0.5-1.26]
4	1	1	1	1
Don't know	1.23 [0.86-1.76]	1.21 [0.85-1.72]	0.82 [0.46-1.44]	0.79 [0.43-1.43]
<b>Age</b>		1.01 [1-1.01]		1.01 [1-1.02]
<b>Sex</b>				
Male		1		1
Female		0.99 [0.82-1.18]		0.95 [0.69-1.31]
<b>Addiction (Mexico)</b>				
non-daily		1		
less than 5		1.2 [0.96-1.51]		
5 to 10		0.98 [0.79-1.22]		
More than 10		1.36 [1.02-1.8]		
<b>Addiction (Uruguay)</b>				1.09 [0.99-1.19]
<b>Smoking status</b>				
Every day				0.67 [0.39-1.15]
Less than everyday				1

**Table A.13.** Sensitivity analysis for the association between close social network norms and feeling uncomfortable about smoking (three level variable), 2008-2012 ITC Mexico, Uruguay Survey

Adjusted Risk ratios (95% CI)

Variables	Negative stereotypes of smokers			
	Mexico (n=)		Uruguay (n=)	
	Agree vs. Disagree	Neutral vs. Disagree	Agree vs. Disagree	Neutral vs. Disagree
<b>Close social network norms</b>				
<b>Norms</b>				
Disagree or neutral	1	1	1	1
Agree	2.14 [1.65-2.79]	0.93 [0.7-1.23]	2.39 [1.61-3.55]	0.92 [0.48-1.75]
Strongly agree	2.84 [2.02-4.01]	0.79 [0.54-1.16]	2.91 [1.7-4.98]	1.65 [0.77-3.51]
<b>Income (quartile)</b>				
1	1.01 [0.69-1.47]	1.18 [0.72-1.93]	0.83 [0.5-1.37]	0.56 [0.27-1.18]
2	0.79 [0.54-1.14]	0.94 [0.58-1.52]	0.71 [0.46-1.11]	0.52 [0.25-1.08]
3	0.88 [0.61-1.25]	0.92 [0.58-1.47]	0.91 [0.57-1.46]	0.59 [0.29-1.2]
4	1	1	0.67 [0.4-1.13]	0.92 [0.43-1.93]
Don't know	0.94 [0.59-1.48]	1.09 [0.6-1.99]	1	1
<b>Education</b>				
No school or primary	1.08 [0.72-1.61]	1.18 [0.75-1.85]	0.87 [0.46-1.64]	0.81 [0.34-1.9]
Middle school	1.3 [0.9-1.89]	1.27 [0.83-1.94]	0.89 [0.55-1.43]	1.08 [0.55-2.12]
High school, incomplete university	1.27 [0.89-1.81]	1.57 [1.03-2.39]	1.01 [0.6-1.69]	0.98 [0.5-1.93]
University graduate	1	1		
<b>Age</b>	1 [0.99-1.01]	1 [0.99-1.01]	1 [0.99-1.02]	1 [0.98-1.02]
<b>Sex</b>				
Male	1	1	1	1
Female	1.12 [0.89-1.4]	0.97 [0.74-1.26]	1 [0.71-1.42]	1.26 [0.78-2.01]
<b>Addiction (Mexico)</b>				
non-daily	1	1		
less than 5	1.13 [0.85-1.5]	0.97 [0.69-1.35]		
5 to 10	1.15 [0.86-1.53]	1.29 [0.93-1.79]		
More than 10	1.24 [0.87-1.76]	1 [0.63-1.56]		
<b>Addiction (Uruguay)</b>			1.06 [0.95-1.17]	0.91 [0.78-1.07]
<b>Smoking status</b>				
Yes			1.22 [0.7-2.12]	1.11 [0.51-2.4]
No			1	1

**Table A.14** Sensitivity analysis for the association between societal norms and feeling uncomfortable about smoking, 2008-2012 ITC Mexico (three level variables), Uruguay Survey

Adjusted Risk ratios (95% CI)				
Negative stereotypes of smokers				
Variables	Mexico (n=)		Uruguay (n=)	
	Agree vs. Disagree	Neutral vs. Disagree	Agree vs. Disagree	Neutral vs. Disagree
<b>Societal Norms</b>				
<b>Norms</b>				
Disagree or neutral	1	1		
Agree	3.46 [2.75-4.35]	0.85 [0.65-1.1]	2.98 [2.19-4.06]	0.64 [0.39-1.06]
Strongly agree	4.88 [3.17-7.52]	0.48 [0.27-0.84]	4.53 [2.12-9.66]	0.95 [0.39-2.33]
<b>Income (quartile)</b>				
1	1.05 [0.71-1.53]	1.17 [0.72-1.91]	0.72 [0.43-1.18]	0.56 [0.27-1.17]
2	0.84 [0.58-1.22]	0.93 [0.58-1.49]	0.6 [0.38-0.97]	0.55 [0.26-1.12]
3	0.86 [0.6-1.24]	0.92 [0.58-1.47]	0.81 [0.53-1.24]	0.59 [0.29-1.22]
4	1	1	1	1
Don't know	0.9 [0.56-1.44]	1.09 [0.59-2.01]	0.59 [0.35-1.01]	0.87 [0.41-1.82]
<b>Education</b>				
No school or primary	1.02 [0.68-1.53]	1.2 [0.76-1.89]	0.75 [0.38-1.49]	0.81 [0.35-1.88]
Middle school	1.17 [0.8-1.71]	1.31 [0.86-2]	0.82 [0.48-1.41]	1.09 [0.56-2.1]
High school, incomplete university	1.17 [0.81-1.69]	1.61 [1.05-2.46]	1.01 [0.58-1.75]	0.99 [0.51-1.91]
University graduate	1	1	1	1
<b>Age</b>	1 [0.99-1]	1 [0.99-1.01]	1 [0.99-1.01]	1 [0.98-1.02]
<b>Sex</b>				
Male	1	1	1	1
Female	1.14 [0.91-1.43]	0.97 [0.75-1.26]	0.96 [0.68-1.36]	1.28 [0.8-2.03]
<b>Addiction (Mexico)</b>				
non-daily	1	1		
less than 5	1.07 [0.8-1.43]	0.98 [0.7-1.36]		
5 to 10	1.12 [0.83-1.49]	1.3 [0.94-1.79]		
More than 10	1.11 [0.76-1.63]	1.01 [0.64-1.58]		
<b>Addiction (Uruguay)</b>			1.04 [0.95-1.14]	0.93 [0.8-1.08]
<b>Smoking status</b>				
Yes			1.27 [0.74-2.18]	1.1 [0.51-2.38]
No			1	1

**Table A.15** Sensitivity analysis for the association between friend norms and feeling uncomfortable about smoking, 2008-2012 ITC Mexico (three level variables), Uruguay Survey

Adjusted Risk ratios (95% CI)				
Negative stereotypes of smokers				
Variables	Mexico (n=)		Uruguay (n=)	
	Agree vs. Disagree	Neutral vs. Disagree	Agree vs. Disagree	Neutral vs. Disagree
<b>Societal Norms</b>				
<b>Friend norms</b>				
<b>Friend norms</b>	1.01 [0.95-1.08]	0.99 [0.91-1.07]	0.91 [0.82-1.01]	0.93 [0.82-1.06]
<b>Income (quartile)</b>				
1	1.07 [0.74-1.55]	1.17 [0.71-1.91]	0.78 [0.48-1.26]	0.56 [0.26-1.18]
2	0.8 [0.56-1.14]	0.94 [0.58-1.52]	0.68 [0.44-1.05]	0.53 [0.25-1.12]
3	0.89 [0.63-1.25]	0.92 [0.58-1.48]	0.9 [0.56-1.42]	0.6 [0.3-1.23]
4	1	1	1	1
Don't know	0.93 [0.59-1.46]	1.09 [0.59-2]	0.6 [0.35-1.01]	0.88 [0.42-1.85]
<b>Education</b>				
No school or primary	1.01 [0.69-1.49]	1.2 [0.77-1.89]	0.93 [0.5-1.75]	0.83 [0.36-1.92]
Middle school	1.21 [0.85-1.74]	1.3 [0.85-1.98]	0.96 [0.59-1.55]	1.12 [0.57-2.2]
High school, incomplete university	1.23 [0.88-1.74]	1.58 [1.03-2.42]	1.07 [0.64-1.77]	1.02 [0.52-1.99]
University graduate			1	1
<b>Age</b>	1 [0.99-1.01]	1 [0.99-1.01]	1 [0.99-1.01]	1 [0.98-1.02]
<b>Sex</b>				
Male	1	1	1	1
Female	1.15 [0.92-1.43]	0.96 [0.73-1.26]	1 [0.71-1.41]	1.26 [0.78-2.02]
<b>Addiction (Mexico)</b>				
non-daily				
less than 5	1.13 [0.85-1.5]	0.97 [0.7-1.36]		
5 to 10	1.12 [0.85-1.48]	1.3 [0.94-1.8]		
More than 10	1.21 [0.85-1.72]	1 [0.64-1.57]		
<b>Addiction (Uruguay)</b>			1.06 [0.96-1.18]	0.93 [0.8-1.08]
<b>Smoking status</b>				
Yes			1.24 [0.72-2.16]	1.09 [0.5-2.34]
No			1	1

**Table A.16** Sensitivity analysis for the association between close social network norms and perceiving a negative stereotype of smokers, 2008-2012 ITC Mexico (three level variables), Uruguay Survey

Adjusted Risk ratios (95% CI)

Variables	Negative stereotypes of smokers			
	Mexico (n=)		Uruguay (n=)	
	Agree vs. Disagree	Neutral vs. Disagree	Agree vs. Disagree	Neutral vs. Disagree
<b>Close social network norms</b>				
<b>Norms</b>				
Disagree or neutral	1	1	1	1
Agree	3.17 [2.34-4.3]	1.02 [0.68-1.53]	1.62 [0.62-4.22]	0.77 [0.21-2.81]
Strongly agree	3.59 [2.56-5.04]	0.9 [0.49-1.64]	1.97 [0.59-6.55]	0.57 [0.11-2.73]
<b>Income (quartile)</b>				
1	0.67 [0.42-1.06]	0.79 [0.43-1.46]	1.01 [0.39-2.62]	0.49 [0.1-2.39]
2	0.7 [0.46-1.07]	0.88 [0.5-1.54]	1.25 [0.53-2.92]	0.49 [0.11-2.08]
3	0.71 [0.46-1.11]	0.79 [0.43-1.46]	0.65 [0.23-1.79]	0.23 [0.04-1.28]
4	1	1	1	1
Don't know	1.17 [0.55-2.46]	1.19 [0.48-2.94]	0.98 [0.26-3.69]	1 [0.19-5.09]
<b>Education</b>				
No school or primary	0.71 [0.42-1.19]	0.9 [0.43-1.88]	2.01 [0.56-7.16]	0.36 [0.04-2.9]
Middle school	0.77 [0.47-1.25]	1.06 [0.53-2.13]	1.16 [0.48-2.82]	0.65 [0.2-2.09]
High school, incomplete university	0.78 [0.48-1.26]	1.15 [0.58-2.29]	1.63 [0.68-3.93]	0.48 [0.13-1.83]
University graduate	1	1	1	1
<b>Age</b>	1 [0.99-1.01]	1 [0.99-1.01]	1.02 [0.99-1.04]	1.01 [0.98-1.05]
<b>Sex</b>				
Male	1	1	1	1
Female	1.07 [0.81-1.4]	1.19 [0.81-1.73]	1.1 [0.5-2.38]	1.17 [0.4-3.38]
<b>Addiction (Mexico)</b>				
non-daily				
less than 5	1.19 [0.84-1.67]	0.88 [0.55-1.38]		
5 to 10	1.42 [1.04-1.92]	1.44 [0.91-2.29]		
More than 10	1.65 [1.06-2.57]	1.33 [0.77-2.3]		
<b>Addiction (Uruguay)</b>			1.32 [1.03-1.69]	1.41 [1.03-1.91]
<b>Smoking status</b>				
Yes			1.08 [0.36-3.2]	1.04 [0.26-4.06]
No			1	1



**Table A.17** Sensitivity analysis for the association between societal norms and perceiving a negative stereotype of smokers, 2008-2012 ITC Mexico (three level variables), Uruguay Survey

Adjusted Risk ratios (95% CI)				
Variables	Negative stereotypes of smokers			
	Mexico (n=)		Uruguay (n=)	
	Agree vs. Disagree	Neutral vs. Disagree	Agree vs. Disagree	Neutral vs. Disagree
<b>Societal Norms</b>				
<b>Norms</b>				
Disagree or neutral				
Agree	2.42 [1.86-3.14]	0.9 [0.6-1.33]	1.34 [0.67-2.68]	0.87 [0.3-2.51]
Strongly agree	2.03 [1.32-3.13]	0.52 [0.29-0.95]	6.8 [2.85-16.22]	3.24 [0.75-13.94]
<b>Income (quartile)</b>				
1	0.72 [0.46-1.12]	0.79 [0.43-1.43]	0.9 [0.36-2.24]	0.51 [0.1-2.45]
2	0.74 [0.49-1.12]	0.87 [0.5-1.51]	1.13 [0.45-2.78]	0.51 [0.11-2.24]
3	0.7 [0.45-1.09]	0.79 [0.43-1.45]	0.59 [0.21-1.62]	0.22 [0.04-1.24]
4		1		1
Don't know	1.1 [0.53-2.28]	1.17 [0.47-2.91]	0.92 [0.26-3.26]	1.09 [0.23-5.13]
<b>Education</b>				
No school or primary	0.67 [0.4-1.12]	0.91 [0.44-1.88]	1.95 [0.59-6.43]	0.38 [0.04-2.94]
Middle school	0.7 [0.43-1.13]	1.09 [0.54-2.19]	1.19 [0.5-2.84]	0.69 [0.21-2.17]
High school, incomplete university	0.75 [0.46-1.2]	1.19 [0.6-2.35]	1.7 [0.72-4.02]	0.51 [0.13-1.89]
University graduate		1		1
<b>Age</b>	1 [0.99-1.01]	1 [0.99-1.01]	1.02 [0.99-1.04]	1.01 [0.98-1.05]
<b>Sex</b>				
Male	1	1	1	1
Female	1.11 [0.84-1.45]	1.2 [0.83-1.74]	1.09 [0.5-2.37]	1.2 [0.41-3.5]
<b>Addiction (Mexico)</b>				
non-daily	1	1		
less than 5	1.15 [0.83-1.59]	0.88 [0.56-1.39]		
5 to 10	1.37 [1.01-1.86]	1.46 [0.92-2.29]		
More than 10	1.49 [0.97-2.28]	1.32 [0.76-2.29]		
<b>Addiction (Uruguay)</b>			1.31 [1.03-1.67]	1.4 [1.04-1.89]
<b>Smoking status</b>				
Yes			1.11 [0.39-3.18]	1.04 [0.27-3.88]
No				

**Table A.18** Sensitivity analysis for the association between friend norms and perceiving a negative stereotype of smokers, 2008-2012 ITC Mexico (three level variables), Uruguay Survey

Adjusted Risk ratios (95% CI)

Variables	Negative stereotypes of smokers			
	Mexico (n=)		Uruguay (n=)	
	Agree vs. Disagree	Neutral vs. Disagree	Agree vs. Disagree	Neutral vs. Disagree
<b>Friend norms</b>				
<b>Friend norms</b>	0.97 [0.89-1.05]	1.02 [0.91-1.14]	0.96 [0.79-1.18]	1.01 [0.74-1.38]
<b>Income (quartile)</b>				
1	0.72 [0.47-1.12]	0.78 [0.43-1.42]	0.98 [0.39-2.44]	0.53 [0.11-2.55]
2	0.72 [0.47-1.09]	0.88 [0.5-1.54]	1.2 [0.49-2.92]	0.51 [0.12-2.19]
3	0.72 [0.47-1.1]	0.79 [0.43-1.46]	0.64 [0.24-1.73]	0.23 [0.04-1.29]
4	1	1	1	1
Don't know	1.14 [0.54-2.38]	1.17 [0.47-2.91]	0.89 [0.26-3.1]	1.08 [0.23-5.03]
<b>Education</b>				
No school or primary	0.68 [0.41-1.12]	0.91 [0.44-1.89]	2 [0.6-6.67]	0.36 [0.04-2.83]
Middle school	0.73 [0.45-1.17]	1.07 [0.53-2.15]	1.19 [0.5-2.82]	0.65 [0.2-2.13]
High school, incomplete university	0.77 [0.48-1.23]	1.15 [0.58-2.28]	1.67 [0.68-4.12]	0.49 [0.12-1.86]
University graduate	1	1	1	1
<b>Age</b>	1 [0.99-1.01]	1 [0.99-1.02]	1.02 [0.99-1.04]	1.01 [0.97-1.06]
<b>Sex</b>				
Male	1	1	1	1
Female	1.11 [0.85-1.45]	1.19 [0.82-1.74]	1.09 [0.5-2.36]	1.17 [0.39-3.46]
<b>Addiction (Mexico)</b>				
non-daily	1	1		
less than 5	1.19 [0.85-1.65]	0.88 [0.56-1.39]		
5 to 10	1.38 [1.02-1.86]	1.45 [0.92-2.29]		
More than 10	1.61 [1.04-2.48]	1.32 [0.77-2.28]		
<b>Addiction (Uruguay)</b>			1.33 [1.03-1.71]	1.4 [1.02-1.91]
<b>Smoking status</b>				
Yes			1.09 [0.37-3.23]	1 [0.26-3.82]
No			1	1

**Table A.19** Sensitivity analysis for the association between close social network norms and marginalization of smokers, 2008-2012 ITC Mexico (three level variables), Uruguay Survey

Adjusted Risk ratios (95% CI)				
Negative stereotypes of smokers				
Variables	Mexico (n=)		Uruguay (n=)	
	Agree vs. Disagree	Neutral vs. Disagree	Agree vs. Disagree	Neutral vs. Disagree
<b>Close social network norms</b>				
<b>Norms</b>				
Disagree or neutral	1	1	1	1
Agree	1.51 [1.17-1.94]	0.9 [0.69-1.18]	1.55 [1.01-2.38]	0.85 [0.51-1.44]
Strongly agree	1.79 [1.32-2.43]	0.68 [0.47-0.98]	1.96 [1.23-3.13]	1.34 [0.75-2.41]
<b>Income (quartile)</b>				
1	1.22 [0.87-1.72]	1.32 [0.87-1.99]		
2	1.05 [0.77-1.44]	1.11 [0.74-1.67]		
3	0.91 [0.66-1.27]	0.99 [0.65-1.5]		
4	1	1	1	1
Don't know	1.03 [0.67-1.58]	1.09 [0.66-1.8]		
<b>Education</b>				
No school or primary	1.32 [0.93-1.89]	1.29 [0.82-2]	0.9 [0.5-1.62]	0.77 [0.43-1.37]
Middle school	1.32 [0.94-1.85]	1.18 [0.77-1.82]	0.81 [0.5-1.33]	0.9 [0.55-1.46]
High school, incomplete university	1.3 [0.95-1.78]	1.35 [0.9-2.03]	0.98 [0.57-1.67]	0.64 [0.39-1.05]
University graduate	1	1	1	1
<b>Age</b>	1.01 [1-1.01]	1 [1-1.01]	1.02 [1-1.03]	1 [0.99-1.02]
<b>Sex</b>			1.09 [0.79-1.49]	0.91 [0.63-1.33]
Male	1	1	1	1
Female	0.91 [0.75-1.11]	0.93 [0.73-1.18]		
<b>Addiction (Mexico)</b>				
non-daily	1	1		
less than 5	1.3 [1.01-1.68]	1.08 [0.79-1.47]		
5 to 10	1.15 [0.9-1.46]	1.07 [0.79-1.44]		
More than 10	1.38 [0.98-1.94]	0.88 [0.58-1.32]		
<b>Addiction (Uruguay)</b>			1.08 [0.99-1.19]	0.96 [0.86-1.07]
<b>Smoking status</b>				
Yes			0.59 [0.34-1.03]	0.93 [0.53-1.63]
No			1	1

**Table A.20** Sensitivity analysis for the association between societal norms and marginalization of smokers, 2008-2012 ITC Mexico (three level variables), Uruguay Survey

Adjusted Risk ratios (95% CI)				
Negative stereotypes of smokers				
Variables	Mexico (n=)		Uruguay (n=)	
	Agree vs. Disagree	Neutral vs. Disagree	Agree vs. Disagree	Neutral vs. Disagree
<b>Societal Norms</b>				
<b>Norms</b>				
Disagree or neutral	1	1	1	1
Agree	3.17 [2.57-3.9]	1.12 [0.89-1.41]	3.16 [2.26-4.42]	0.92 [0.64-1.32]
Strongly agree	4.55 [3.21-6.46]	0.63 [0.39-1.04]	4.61 [2.85-7.46]	0.81 [0.44-1.48]
<b>Income (quartile)</b>				
1	1.26 [0.88-1.79]	1.3 [0.87-1.96]	1.04 [0.65-1.68]	0.74 [0.43-1.27]
2	1.14 [0.82-1.58]	1.11 [0.74-1.67]	0.91 [0.58-1.43]	0.77 [0.47-1.25]
3	0.9 [0.64-1.26]	0.99 [0.65-1.5]	0.69 [0.44-1.08]	0.67 [0.4-1.12]
4	1	1	1	1
Don't know	1.01 [0.66-1.55]	1.09 [0.66-1.79]	1.07 [0.62-1.87]	0.78 [0.41-1.47]
<b>Education</b>				
No school or primary	1.31 [0.91-1.88]	1.32 [0.85-2.05]	0.78 [0.43-1.42]	0.76 [0.42-1.37]
Middle school	1.24 [0.87-1.75]	1.21 [0.79-1.86]	0.74 [0.45-1.21]	0.91 [0.55-1.48]
High school, incomplete university	1.23 [0.88-1.7]	1.39 [0.93-2.09]	0.98 [0.56-1.7]	0.64 [0.4-1.05]
University graduate	1	1	1	1
<b>Age</b>	1.01 [1-1.01]	1 [1-1.01]	1.02 [1-1.03]	1 [0.99-1.01]
<b>Sex</b>				
Male	1		1	1
Female	0.9 [0.74-1.1]	0.92 [0.72-1.17]	1.05 [0.76-1.46]	0.93 [0.64-1.34]
<b>Addiction (Mexico)</b>				
non-daily			1	1
less than 5	1.25 [0.97-1.61]	1.08 [0.79-1.47]		
5 to 10	1.14 [0.89-1.46]	1.07 [0.79-1.45]		
More than 10	1.28 [0.88-1.85]	0.88 [0.58-1.32]		
<b>Addiction (Uruguay)</b>			1.07 [0.97-1.18]	0.96 [0.86-1.08]
<b>Smoking status</b>				
Yes			0.57 [0.33-0.98]	0.92 [0.53-1.6]
No			1	1

**Table A.21** Sensitivity analysis for the association between friend norms and marginalization of smokers, 2008-2012 ITC Mexico (three level variables), Uruguay Survey

Adjusted Risk ratios (95% CI)				
Negative stereotypes of smokers				
Variables	Mexico (n=)		Uruguay (n=)	
	Agree vs. Disagree	Neutral vs. Disagree	Agree vs. Disagree	Neutral vs. Disagree
<b>Friend norms</b>				
<b>Friend norms</b>	0.97 [0.92-1.02]	1.01 [0.94-1.08]	0.91 [0.82-1]	0.9 [0.81-1]
<b>Income (quartile)</b>				
1	1.26 [0.89-1.78]	1.29 [0.86-1.95]	1.1 [0.7-1.71]	0.76 [0.43-1.31]
2	1.06 [0.77-1.44]	1.11 [0.74-1.67]	1 [0.65-1.55]	0.76 [0.46-1.26]
3	0.92 [0.66-1.27]	0.99 [0.65-1.5]	0.78 [0.51-1.19]	0.68 [0.4-1.14]
4	1	1	1	1
Don't know	1.02 [0.67-1.56]	1.1 [0.66-1.81]	1.03 [0.58-1.82]	0.8 [0.42-1.5]
<b>Education</b>				
No school or primary	1.28 [0.9-1.82]	1.32 [0.85-2.06]	0.96 [0.54-1.71]	0.82 [0.46-1.45]
Middle school	1.28 [0.92-1.78]	1.21 [0.79-1.85]	0.87 [0.53-1.41]	0.96 [0.59-1.57]
High school, incomplete university	1.28 [0.94-1.75]	1.36 [0.91-2.05]	1.02 [0.6-1.74]	0.67 [0.41-1.1]
University graduate	1	1	1	1
<b>Age</b>	1.01 [1-1.01]	1 [1-1.01]	1.01 [1-1.02]	1 [0.98-1.01]
<b>Sex</b>				
Male	1	1	1	1
Female	0.92 [0.76-1.11]	0.92 [0.72-1.17]	1.08 [0.79-1.48]	0.91 [0.62-1.32]
<b>Addiction (Mexico)</b>				
non-daily	1	1		
less than 5	1.3 [1.01-1.67]	1.08 [0.79-1.48]		
5 to 10	1.14 [0.9-1.44]	1.08 [0.8-1.45]		
More than 10	1.37 [0.98-1.93]	0.88 [0.59-1.32]		
<b>Addiction (Uruguay)</b>			1.09 [1-1.2]	0.97 [0.87-1.09]
<b>Smoking status</b>				
Yes			0.6 [0.34-1.03]	0.91 [0.51-1.61]
No			1	1

**Table A.22** Sensitivity analysis for the association between education and feeling uncomfortable about smoking, 2008-2012 ITC Mexico (three level variables), Uruguay Survey

Adjusted Risk ratios (95% CI)

Variables	Negative stereotypes of smokers			
	Mexico (n=)		Uruguay (n=)	
	Agree vs. Disagree	Neutral vs. Disagree	Agree vs. Disagree	Neutral vs. Disagree
<b>Education</b>				
<b>Education</b>				
No school or primary	1.01 [0.71-1.43]	1.18 [0.75-1.85]	0.74 [0.41-1.34]	0.56 [0.26-1.21]
Middle school	1.19 [0.86-1.65]	1.32 [0.9-1.93]	0.83 [0.53-1.29]	0.87 [0.48-1.57]
High school, incomplete university	1.22 [0.87-1.7]	1.59 [1.07-2.38]	0.98 [0.6-1.61]	0.87 [0.45-1.65]
University graduate	1	1	1	1
<b>Age</b>	1 [0.99-1.01]	1 [0.99-1.01]	1 [0.99-1.02]	1 [0.98-1.02]
<b>Sex</b>				
Male	1	1	1	1
Female	1.15 [0.92-1.43]	0.96 [0.74-1.26]	0.99 [0.7-1.4]	1.22 [0.76-1.94]
<b>Addiction (Mexico)</b>				
non-daily	1	1		
less than 5	1.13 [0.85-1.5]	0.97 [0.7-1.36]		
5 to 10	1.11 [0.84-1.47]	1.29 [0.93-1.78]		
More than 10	1.22 [0.86-1.73]	1 [0.63-1.57]		
<b>Addiction (Uruguay)</b>			1.05 [0.95-1.16]	0.92 [0.79-1.07]
<b>Smoking status</b>				
Yes			1.26 [0.72-2.23]	1.11 [0.52-2.35]
No			1	1

**Table A.23** Sensitivity analysis for the association between income and feeling uncomfortable about smoking, 2008-2012 ITC Mexico (three level variables), Uruguay Survey

Adjusted Risk ratios (95% CI)

Variables	Negative stereotypes of smokers			
	Mexico (n=)		Uruguay (n=)	
	Agree vs. Disagree	Neutral vs. Disagree	Agree vs. Disagree	Neutral vs. Disagree
<b>Income (quartile)</b>				
<b>Income (quartile)</b>				
1	1.06 [0.76-1.47]	1.17 [0.76-1.81]	0.7 [0.43-1.15]	0.5 [0.24-1.01]
2	0.81 [0.58-1.12]	0.95 [0.61-1.49]	0.65 [0.44-0.95]	0.5 [0.25-0.99]
3	0.9 [0.64-1.26]	0.95 [0.6-1.49]	0.86 [0.55-1.34]	0.59 [0.31-1.13]

4		1	1	1	1
Don't know	0.93 [0.6-1.45]	1.11 [0.62-2]	0.57 [0.33-0.99]	0.85 [0.41-1.77]	
<b>Age</b>	1 [0.99-1]	1 [0.99-1.01]	1 [0.99-1.02]	1 [0.98-1.02]	
<b>Sex</b>					
Male	1	1	1	1	
Female	1.15 [0.93-1.44]	0.97 [0.74-1.26]	1.01 [0.71-1.43]	1.28 [0.81-2.04]	
<b>Addiction (Mexico)</b>					
non-daily	1	1			
less than 5	1.13 [0.85-1.5]	0.97 [0.7-1.36]			
5 to 10	1.12 [0.85-1.48]	1.29 [0.93-1.79]			
More than 10	1.21 [0.86-1.72]	1 [0.64-1.57]			
<b>Addiction (Uruguay)</b>			1.05 [0.95-1.17]	0.92 [0.78-1.07]	
<b>Smoking status</b>					
Yes			1.26 [0.72-2.19]	1.09 [0.51-2.32]	
No			1	1	

**Table A.24** Sensitivity analysis for the association between education and perceiving a negative stereotype of smokers (three level variable), 2008-2012 ITC Mexico, Uruguay Survey

Adjusted Risk ratios (95% CI)

Variables	Negative stereotypes of smokers			
	Mexico (n=)		Uruguay (n=)	
	Agree vs. Disagree	Neutral vs. Disagree	Agree vs. Disagree	Neutral vs. Disagree
<b>Education</b>				
<b>Education</b>				
No school or primary	0.59 [0.37-0.94]	0.85 [0.44-1.62]	2.02 [0.54-7.57]	0.25 [0.03-1.79]
Middle school	0.64 [0.41-1.01]	1.01 [0.53-1.92]	1.13 [0.45-2.8]	0.49 [0.15-1.56]
High school	0.71 [0.45-1.13]	1.12 [0.58-2.15]	1.58 [0.66-3.8]	0.39 [0.1-1.52]
University graduate	1	1	1	1
<b>Age</b>	1 [0.99-1.01]	1 [0.99-1.01]	1.02 [0.99-1.04]	1.01 [0.98-1.05]
<b>Sex</b>				
Male	1	1	1	1
Female	1.13 [0.87-1.47]	1.19 [0.82-1.73]	1.1 [0.5-2.42]	1.12 [0.38-3.29]
<b>Addiction (Mexico)</b>				
non-daily				
less than 5	1.2 [0.86-1.66]	0.89 [0.56-1.41]		
5 to 10	1.39 [1.03-1.88]	1.48 [0.93-2.35]		
More than 10	1.62 [1.04-2.5]	1.34 [0.77-2.32]		
<b>Addiction (Uruguay)</b>			1.33 [1.03-1.72]	1.41 [1.03-1.93]
<b>Smoking status</b>				
Yes			1.12 [0.36-3.4]	1.03 [0.25-4.19]
No			1	1

**Table A.25** Sensitivity analysis for the association between income and perceiving a negative stereotype of smokers (three level variable), 2008-2012 ITC Mexico, Uruguay Survey

Adjusted Risk ratios (95% CI)				
Negative stereotypes of smokers				
Variables	Mexico (n=)		Uruguay (n=)	
	Agree vs. Disagree	Neutral vs. Disagree	Agree vs. Disagree	Neutral vs. Disagree
<b>Income (quartile)</b>				
Income (quartile)				
1	0.65 [0.43-0.97]	0.74 [0.42-1.28]	1.14 [0.38-3.36]	0.39 [0.08-1.81]
2	0.65 [0.44-0.96]	0.85 [0.5-1.44]	1.33 [0.57-3.07]	0.43 [0.1-1.81]
3	0.68 [0.44-1.04]	0.78 [0.42-1.45]	0.68 [0.24-1.94]	0.2 [0.03-1.16]
4	1	1	1	1
Don't know	1.07 [0.52-2.21]	1.14 [0.46-2.82]	0.92 [0.26-3.18]	1.02 [0.22-4.62]
<b>Age</b>	1 [0.99-1.01]	1 [0.99-1.01]	1.02 [1-1.05]	1.01 [0.98-1.05]
<b>Sex</b>				
Male	1	1	1	1
Female	1.12 [0.86-1.47]	1.2 [0.82-1.74]	1.02 [0.48-2.13]	1.3 [0.46-3.64]
<b>Addiction (Mexico)</b>				
non-daily	1	1		
less than 5	1.18 [0.85-1.64]	0.88 [0.56-1.39]		
5 to 10	1.35 [1-1.82]	1.44 [0.91-2.28]		
More than 10	1.59 [1.02-2.46]	1.32 [0.77-2.29]		
<b>Addiction (Uruguay)</b>			1.34 [1.04-1.73]	1.37 [1-1.87]
<b>Smoking status</b>				
Yes			1.12 [0.37-3.37]	0.98 [0.25-3.77]
No				

**Table A.26** Sensitivity analysis for the association between education and marginalization of smokers (three level variable), 2008-2012 ITC Mexico, Uruguay Survey

Adjusted Risk ratios (95% CI)				
Negative stereotypes of smokers				
Variables	Mexico (n=)		Uruguay (n=)	
	Agree vs. Disagree	Neutral vs. Disagree	Agree vs. Disagree	Neutral vs. Disagree
<b>Education</b>				
Education				
No school or primary	1.41 [1.02-1.95]	1.48 [1-2.19]	0.91 [0.53-1.56]	0.64 [0.37-1.11]
Middle school	1.36 [1-1.84]	1.3 [0.88-1.93]	0.81 [0.5-1.3]	0.81 [0.51-1.27]



High school, incomplete university	1.32 [0.97-1.79]	1.42 [0.96-2.1]	0.97 [0.58-1.64]	0.6 [0.37-0.97]
University graduate	1	1	1	1
<b>Age</b>	1.01 [1-1.01]	1 [1-1.01]	1.02 [1-1.03]	1 [0.99-1.02]
<b>Sex</b>			1.1 [0.81-1.51]	0.9 [0.63-1.31]
Male	1	1	1	1
Female	0.93 [0.77-1.12]	0.92 [0.72-1.17]		
<b>Addiction (Mexico)</b>				
non-daily	1	1		
less than 5	1.29 [1-1.66]	1.08 [0.79-1.47]		
5 to 10	1.11 [0.87-1.4]	1.06 [0.79-1.43]		
More than 10	1.35 [0.96-1.89]	0.87 [0.58-1.31]		
<b>Addiction (Uruguay)</b>			1.09 [0.99-1.19]	0.96 [0.86-1.07]
<b>Smoking status</b>				
Yes			0.61 [0.35-1.06]	0.94 [0.54-1.62]
No			1	1

**Table A.27** Sensitivity analysis for the association between income and marginalization of smokers (three level variable), 2008-2012 ITC Mexico, Uruguay Survey

Adjusted Risk ratios (95% CI)

Variables	Negative stereotypes of smokers			
	Mexico (n=)		Uruguay (n=)	
	Agree vs. Disagree	Neutral vs. Disagree	Agree vs. Disagree	Neutral vs. Disagree
<b>Income (quartile)</b>				
<b>Income (quartile)</b>				
1	1.26 [0.88-1.79]	1.3 [0.87-1.96]	1.01 [0.66-1.53]	0.7 [0.41-1.18]
2	1.14 [0.82-1.58]	1.11 [0.74-1.67]	0.95 [0.63-1.45]	0.74 [0.46-1.19]
3	0.9 [0.64-1.26]	0.99 [0.65-1.5]	0.74 [0.49-1.12]	0.65 [0.39-1.07]
4	1	1	1	1
Don't know	1.01 [0.66-1.55]	1.09 [0.66-1.79]	0.99 [0.56-1.76]	0.78 [0.42-1.47]
<b>Age</b>	1.01 [1-1.01]	1 [1-1.01]	1.02 [1-1.03]	1 [0.98-1.01]
<b>Sex</b>				
Male	1	1	1	1
Female	0.9 [0.74-1.1]	0.92 [0.72-1.17]	1.09 [0.8-1.49]	0.96 [0.67-1.39]
<b>Addiction (Mexico)</b>				
non-daily	1	1		
less than 5	1.3 [1.01-1.67]	1.09 [0.8-1.48]		

5 to 10	1.14 [0.9-1.44]	1.08 [0.81-1.46]		
More than 10	1.37 [0.98-1.92]	0.89 [0.59-1.33]		
<b>Addiction (Uruguay)</b>			1.08 [0.99-1.18]	0.96 [0.86-1.07]
<b>Smoking status</b>				
Yes			0.6 [0.35-1.05]	0.9 [0.52-1.58]
No			1	1

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## APPENDIX B - EXTENDED TABLES FOR AIM 1

**Table B.1** Sensitivity analysis for the association between HWLs on cigarette packages and feeling uncomfortable about smoking (three level variables, 2008-2012 ITC Mexico, Uruguay Survey)

Adjusted Risk ratios (95% CI)				
Variables	Mexico (n=6701)		Uruguay (n=3340)	
	Agree vs. Disagree	Neutral vs. Disagree	Agree vs. Disagree	Neutral vs. Disagree
<b>Feeling uncomfortable</b>				
<b>Attention to HWL</b>	1.26 [1.09-1.45]	0.9 [0.78-1.04]	1.17 [0.98-1.39]	0.86 [0.69-1.06]
<b>Income (quartile)</b>				
1	1.2 [0.83-1.73]	1.22 [0.75-1.97]	0.7 [0.43-1.16]	0.54 [0.25-1.12]
2	0.91 [0.64-1.3]	0.99 [0.62-1.59]	0.71 [0.49-1.05]	0.52 [0.25-1.07]
3	0.97 [0.69-1.36]	0.99 [0.63-1.56]	0.92 [0.6-1.41]	0.63 [0.31-1.25]
4	1	1	1	1
Don't know	0.94 [0.59-1.47]	1.02 [0.56-1.85]	0.63 [0.36-1.11]	0.74 [0.33-1.65]
<b>Education</b>				
No school or primary	0.97 [0.66-1.43]	1.15 [0.74-1.8]	0.71 [0.42-1.2]	0.58 [0.28-1.22]
Middle school	1.15 [0.8-1.66]	1.25 [0.82-1.92]	0.77 [0.5-1.18]	0.96 [0.51-1.81]
High school, incomplete university	1.21 [0.86-1.71]	1.57 [1.04-2.38]	0.82 [0.53-1.27]	0.88 [0.49-1.6]
University graduate	1	1	1	1
<b>Age</b>	1 [0.99-1.01]	1 [0.99-1.01]	1 [0.99-1.01]	1 [0.98-1.01]
<b>Sex</b>				
Male	1	1	1	1
Female	1.12 [0.9-1.4]	0.96 [0.73-1.26]	1.01 [0.71-1.42]	1.28 [0.8-2.05]
<b>Addiction (Mexico)</b>				
non-daily	1	1		
less than 5	1.1 [0.82-1.49]	0.92 [0.65-1.31]		
5 to 10	1.08 [0.8-1.46]	1.21 [0.86-1.71]		
More than 10	1.12 [0.79-1.58]	0.91 [0.58-1.43]		
<b>Addiction (Uruguay)</b>			1.06 [0.97-1.16]	0.92 [0.8-1.07]
<b>Smoking status</b>				
Every day			1.27 [0.76-2.14]	1.17 [0.54-2.52]
Less than everyday			1	1

**Table B.2** Sensitivity analysis for the association between HWLs on cigarette packages and perceiving a negative stereotype of smokers (three level variables, 2008-2012 ITC Mexico, Uruguay Survey)

Adjusted Risk ratios (95% CI)				
Variables	Mexico (n=6701)		Uruguay (n=3340)	
	Agree vs. Disagree	Neutral vs. Disagree	Agree vs. Disagree	Neutral vs. Disagree
<b>Negative stereotype of smokes</b>				
<b>Attention to HWL</b>	1.06 [0.92-1.22]	0.79 [0.64-0.98]	1.14 [0.73-1.79]	0.91 [0.52-1.6]
<b>Income (quartile)</b>				
1	0.75 [0.48-1.16]	0.78 [0.43-1.43]	1.02 [0.41-2.52]	0.6 [0.12-2.83]
2	0.77 [0.51-1.17]	0.93 [0.53-1.62]	1.26 [0.52-3.05]	0.54 [0.12-2.4]
3	0.73 [0.48-1.12]	0.8 [0.43-1.5]	0.66 [0.25-1.75]	0.24 [0.04-1.36]
4	1	1	1	1
Don't know	1.19 [0.57-2.51]	1.31 [0.53-3.24]	0.86 [0.25-3.01]	1.05 [0.22-4.96]
<b>Education</b>				
No school or primary	0.68 [0.41-1.12]	0.87 [0.42-1.78]	1.75 [0.48-6.38]	0.39 [0.05-3.02]
Middle school	0.71 [0.44-1.14]	0.96 [0.47-1.95]	1.03 [0.41-2.56]	0.64 [0.19-2.16]
High school, incomplete university	0.73 [0.46-1.16]	1.09 [0.55-2.16]	1.46 [0.59-3.6]	0.47 [0.12-1.79]
University graduate	1	1	1	1
<b>Age</b>	1 [0.99-1.01]	1 [0.99-1.01]	1.02 [1-1.04]	1.02 [0.98-1.06]
<b>Sex</b>				
Male	1	1	1	1
Female	1.13 [0.86-1.48]	1.21 [0.83-1.77]	1.06 [0.5-2.23]	1.15 [0.4-3.28]
<b>Addiction (Mexico)</b>				
non-daily	1	1		
less than 5	1.21 [0.87-1.68]	0.88 [0.55-1.39]		
5 to 10	1.39 [1.03-1.89]	1.5 [0.95-2.38]		
More than 10	1.65 [1.08-2.52]	1.31 [0.76-2.25]		
<b>Addiction (Uruguay)</b>			1.32 [1.03-1.69]	1.38 [1.01-1.89]
<b>Smoking status</b>				
Every day			1.15 [0.39-3.34]	0.9 [0.24-3.35]
Less than everyday			1	1

**Table B.3** Sensitivity analysis for the association between HWLs on cigarette packages and perceiving that smokers are marginalized (three level variable), 2008-2012 ITC Mexico, Uruguay Survey

Adjusted Risk ratios (95% CI)				
Variables	Mexico (n=6701)		Uruguay (n=3340)	
	Agree vs. Disagree	Neutral vs. Disagree	Agree vs. Disagree	Neutral vs. Disagree
<b>Perceived marginalization of smokers</b>				
<b>Attention to HWL</b>	1.21 [1.05-1.38]	0.88 [0.76-1.03]	1.07 [0.91-1.26]	0.92 [0.79-1.08]
<b>Income (quartile)</b>				
1	1.37 [0.97-1.93]	1.26 [0.83-1.91]	1.02 [0.65-1.59]	0.74 [0.42-1.27]
2	1.11 [0.81-1.53]	1.12 [0.74-1.7]	1.03 [0.69-1.53]	0.8 [0.48-1.31]
3	0.99 [0.71-1.37]	1.02 [0.67-1.54]	0.76 [0.52-1.12]	0.68 [0.41-1.12]
4	1	1	1	1
Don't know	1.02 [0.66-1.56]	1.07 [0.65-1.74]	1.07 [0.59-1.96]	0.73 [0.39-1.4]
<b>Education</b>				
No school or primary	1.28 [0.89-1.82]	1.26 [0.82-1.96]	0.8 [0.46-1.4]	0.64 [0.35-1.17]
Middle school	1.23 [0.87-1.73]	1.15 [0.75-1.76]	0.78 [0.49-1.25]	0.86 [0.52-1.42]
High school, incomplete university	1.23 [0.9-1.7]	1.36 [0.91-2.04]	0.91 [0.55-1.5]	0.64 [0.39-1.05]
University graduate	1	1	1	1
<b>Age</b>	1.01 [1-1.01]	1.01 [1-1.01]	1.01 [1-1.02]	1 [0.98-1.01]
<b>Sex</b>				
Male	1	1	1	1
Female	0.91 [0.75-1.1]	0.91 [0.71-1.17]	1.01 [0.74-1.38]	0.94 [0.65-1.36]
<b>Addiction (Mexico)</b>				
non-daily	1	1		
less than 5	1.25 [0.97-1.62]	1 [0.71-1.41]		
5 to 10	1.09 [0.84-1.41]	1.01 [0.73-1.38]		
More than 10	1.16 [0.84-1.62]	0.73 [0.49-1.09]		
<b>Addiction (Uruguay)</b>			1.11 [1.01-1.21]	0.98 [0.87-1.09]
<b>Smoking status</b>				
Every day			0.59 [0.35-1]	0.9 [0.51-1.57]
Less than everyday			1	1

**Table B.4** Sensitivity analysis for the association between exposure to SHS in enclosed working areas and feeling uncomfortable about smoking (three level variable), 2008-2012 ITC Mexico, and Uruguay Survey

Variables	Feeling uncomfortable			
	Mexico (n=6701)		Uruguay (n=3340)	
	Agree vs. Disagree	Neutral vs. Disagree	Agree vs. Disagree	Neutral vs. Disagree
<b>Exposure to SHS in enclosed working areas</b>				
<b>Exposure to SHS</b>				
Not exposed to SHS	1	1	1	1
Exposed to SHS	1.38 [0.86-2.21]	1.05 [0.6-1.82]	1.07 [0.61-1.86]	0.83 [0.39-1.74]
Not exposed to the smoke-free policy	1.04 [0.81-1.33]	1.03 [0.77-1.37]	0.78 [0.57-1.07]	1.08 [0.68-1.7]
<b>Income (quartile)</b>				
1	1.18 [0.82-1.69]	1.22 [0.76-1.98]	0.75 [0.46-1.24]	0.52 [0.24-1.09]
2	0.9 [0.63-1.28]	1 [0.62-1.6]	0.74 [0.5-1.08]	0.51 [0.25-1.05]
3	0.96 [0.68-1.35]	1 [0.64-1.56]	0.95 [0.62-1.45]	0.61 [0.31-1.23]
4	1	1	1	1
Don't know	0.93 [0.59-1.46]	1.02 [0.56-1.86]	0.66 [0.37-1.15]	0.74 [0.33-1.64]
<b>Education</b>				
No school or primary	0.94 [0.63-1.4]	1.16 [0.74-1.81]	0.77 [0.45-1.34]	0.56 [0.26-1.17]
Middle school	1.11 [0.77-1.61]	1.26 [0.83-1.91]	0.84 [0.54-1.28]	0.9 [0.47-1.72]
High school, incomplete university	1.2 [0.85-1.69]	1.57 [1.04-2.37]	0.87 [0.56-1.35]	0.85 [0.47-1.56]
University graduate	1	1	1	1
<b>Age</b>	1 [0.99-1.01]	1 [0.99-1.01]	1 [0.99-1.01]	1 [0.98-1.01]
<b>Sex</b>				
Male	1	1	1	1
Female	1.14 [0.92-1.42]	0.95 [0.73-1.25]	1 [0.71-1.41]	1.27 [0.79-2.03]
<b>Addiction (Mexico)</b>				
non-daily	1	1		
less than 5	1.11 [0.81-1.5]	0.93 [0.65-1.31]		
5 to 10	1.09 [0.81-1.46]	1.21 [0.85-1.71]		
More than 10	1.11 [0.78-1.57]	0.91 [0.58-1.41]		
<b>Addiction (Uruguay)</b>			1.06 [0.96-1.16]	0.93 [0.81-1.07]
<b>Smoking status</b>				
Every day			1.23 [0.72-2.08]	1.19 [0.54-2.59]
Less than everyday			1	1

**Table B.5** Sensitivity analysis for the association between exposures to SHS in in enclosed working areas and perceiving a negative stereotype of smokers (three level variables), 2008-2012 ITC Mexico, and Uruguay Survey

Adjusted Risk ratios (95% CI)				
Negative stereotypes of smokers				
Variables	Mexico (n=6701)		Uruguay (n=3340)	
	Agree vs. Disagree	Neutral vs. Disagree	Agree vs. Disagree	Neutral vs. Disagree
<b>Exposure to SHS in enclosed working areas</b>				
<b>Exposure to SHS</b>				
Not exposed to SHS	1	1	1	1
Exposed to SHS	0.81 [0.44-1.51]	0.3 [0.13-0.7]	0.46 [0.18-1.18]	1.05 [0.26-4.17]
Not exposed to the smoke-free policy	0.81 [0.6-1.08]	0.85 [0.55-1.29]	0.92 [0.48-1.78]	0.95 [0.35-2.55]
<b>Income (quartile)</b>				
1	0.76 [0.49-1.18]	0.79 [0.43-1.44]	1.02 [0.4-2.55]	0.63 [0.13-2.9]
2	0.77 [0.51-1.17]	0.93 [0.53-1.62]	1.28 [0.51-3.2]	0.55 [0.12-2.5]
3	0.73 [0.48-1.12]	0.8 [0.43-1.49]	0.71 [0.27-1.82]	0.24 [0.04-1.35]
4	1	1	1	1
Don't know	1.22 [0.58-2.55]	1.3 [0.53-3.22]	0.79 [0.23-2.71]	1.05 [0.22-4.87]
<b>Education</b>				
No school or primary	0.71 [0.43-1.16]	0.89 [0.44-1.83]	1.77 [0.5-6.17]	0.38 [0.05-2.68]
Middle school	0.74 [0.46-1.19]	1.01 [0.5-2.02]	1.05 [0.42-2.64]	0.62 [0.18-2.12]
High school, incomplete university	0.75 [0.47-1.19]	1.12 [0.57-2.2]	1.58 [0.62-4.04]	0.45 [0.12-1.71]
University graduate	1	1	1	1
<b>Age</b>	1 [0.99-1.01]	1 [0.99-1.01]	1.02 [0.99-1.04]	1.02 [0.98-1.06]
<b>Sex</b>				
Male	1	1	1	1
Female	1.14 [0.87-1.5]	1.19 [0.81-1.73]	1 [0.46-2.16]	1.11 [0.39-3.14]
<b>Addiction (Mexico)</b>				
non-daily	1	1		
less than 5	1.21 [0.87-1.68]	0.88 [0.55-1.39]		
5 to 10	1.4 [1.03-1.89]	1.5 [0.95-2.38]		
More than 10	1.69 [1.1-2.58]	1.37 [0.8-2.36]		
<b>Addiction (Uruguay)</b>			1.32 [1.03-1.67]	1.37 [1.01-1.86]
<b>Smoking status</b>				
Every day			1.12 [0.38-3.32]	0.95 [0.26-3.48]
Less than everyday			1	1

**Table B.6** Sensitivity analysis for the association between exposures to SHS in enclosed working areas and marginalization of smokers, 2008-2012 ITC Mexico (three level variables), Uruguay Survey

Adjusted Risk ratios (95% CI)				
Perceived marginalization of smokers				
Variables	Mexico (n=6701)		Uruguay (n=3340)	
	Agree vs. Disagree	Neutral vs. Disagree	Agree vs. Disagree	Neutral vs. Disagree
<b>Exposure to SHS in enclosed working areas</b>				
<b>Exposure to SHS</b>				
Not exposed to SHS	1	1	1	1
Exposed to SHS	0.98 [0.63-1.52]	0.65 [0.41-1.04]	1.11 [0.68-1.82]	0.71 [0.4-1.27]
Not exposed to the smoke-free policy	0.95 [0.76-1.2]	0.9 [0.67-1.19]	0.79 [0.57-1.09]	1.04 [0.73-1.49]
<b>Income (quartile)</b>				
1	1.34 [0.95-1.9]	1.28 [0.84-1.93]	1.09 [0.7-1.69]	0.72 [0.41-1.24]
2	1.1 [0.8-1.5]	1.13 [0.75-1.7]	1.06 [0.71-1.58]	0.79 [0.48-1.29]
3	0.98 [0.7-1.36]	1.02 [0.67-1.54]	0.78 [0.53-1.15]	0.68 [0.41-1.12]
4	1	1	1	1
Don't know	1.01 [0.66-1.54]	1.07 [0.65-1.75]	1.13 [0.62-2.06]	0.72 [0.37-1.38]
<b>Education</b>				
No school or primary	1.26 [0.87-1.81]	1.3 [0.84-2.02]	0.86 [0.49-1.5]	0.62 [0.34-1.15]
Middle school	1.21 [0.85-1.71]	1.19 [0.78-1.81]	0.83 [0.52-1.32]	0.83 [0.5-1.38]
High school, incomplete university	1.23 [0.89-1.7]	1.39 [0.93-2.07]	0.94 [0.57-1.55]	0.63 [0.38-1.05]
University graduate	1	1	1	1
<b>Age</b>	1.01 [1-1.01]	1.01 [1-1.01]	1.02 [1.01-1.03]	1 [0.98-1.01]
<b>Sex</b>				
Male	1	1	1	1
Female	0.92 [0.76-1.11]	0.9 [0.71-1.16]	1 [0.73-1.36]	0.93 [0.64-1.35]
<b>Addiction (Mexico)</b>				
non-daily	1	1		
less than 5	1.25 [0.97-1.63]	1 [0.71-1.4]		
5 to 10	1.09 [0.85-1.41]	1.01 [0.73-1.39]		
More than 10	1.18 [0.85-1.63]	0.74 [0.5-1.11]		
<b>Addiction (Uruguay)</b>			1.1 [1.01-1.21]	0.98 [0.88-1.1]
<b>Smoking status</b>				
Every day			0.57 [0.34-0.97]	0.9 [0.51-1.59]
Less than everyday			1	1



**Table B.7** Sensitivity analysis for the association between exposure to SHS in restaurants and cafes and feeling uncomfortable about smoking, 2008-2012 ITC Mexico (three level variables), Uruguay Survey

Adjusted Risk ratios (95% CI)				
Feeling uncomfortable				
Variables	Mexico (n=6701)		Uruguay (n=3340)	
	Agree vs. Disagree	Neutral vs. Disagree	Agree vs. Disagree	Neutral vs. Disagree
<b>Exposure to SHS in restaurants and cafes</b>				
<b>Exposure to SHS</b>				
Not exposed to SHS	1	1	1	1
Exposed to SHS	0.79 [0.55-1.13]	0.75 [0.43-1.3]	0.65 [0.3-1.41]	0.35 [0.08-1.53]
Not exposed to the smoke-free policy	1.04 [0.84-1.3]	1.22 [0.92-1.62]	0.72 [0.51-1.01]	0.64 [0.4-1.04]
<b>Income (quartile)</b>				
1	1.13 [0.78-1.65]	1.14 [0.71-1.83]	0.78 [0.48-1.29]	0.61 [0.3-1.24]
2	0.87 [0.61-1.24]	0.94 [0.59-1.5]	0.76 [0.51-1.13]	0.56 [0.27-1.17]
3	0.94 [0.67-1.32]	0.96 [0.62-1.5]	0.96 [0.62-1.47]	0.64 [0.33-1.25]
4	1	1	1	1
Don't know	0.91 [0.58-1.43]	0.98 [0.54-1.79]	0.66 [0.38-1.14]	0.82 [0.37-1.8]
<b>Education</b>				
No school or primary	0.91 [0.62-1.33]	1.05 [0.66-1.67]	0.85 [0.51-1.42]	0.69 [0.33-1.43]
Middle school	1.09 [0.76-1.57]	1.19 [0.77-1.82]	0.88 [0.57-1.35]	1.03 [0.53-2]
High school, incomplete university	1.19 [0.85-1.67]	1.54 [1.01-2.33]	0.91 [0.59-1.4]	0.94 [0.52-1.7]
University graduate	1	1	1	1
<b>Age</b>	1 [0.99-1.01]	1 [0.99-1.01]	1 [0.99-1.01]	1 [0.98-1.02]
<b>Sex</b>				
Male	1	1	1	1
Female	1.14 [0.91-1.42]	0.96 [0.73-1.26]	1.01 [0.72-1.42]	1.26 [0.78-2.02]
<b>Addiction (Mexico)</b>				
non-daily	1	1		
less than 5	1.11 [0.82-1.5]	0.92 [0.65-1.31]		
5 to 10	1.09 [0.81-1.46]	1.2 [0.85-1.69]		
More than 10	1.12 [0.79-1.59]	0.9 [0.58-1.41]		
<b>Addiction (Uruguay)</b>			1.06 [0.96-1.16]	0.94 [0.81-1.08]
<b>Smoking status</b>				
Every day			1.25 [0.73-2.11]	1.18 [0.53-2.62]
Less than everyday			1	1

**Table B.8** Sensitivity analysis for the association between exposure to SHS in restaurants and cafes and perceiving a negative stereotype of smokers (three level variables), 2008-2012 ITC Mexico, Uruguay Survey

Adjusted Risk ratios (95% CI)				
Negative stereotypes of smokers				
Variables	Mexico (n=6701)		Uruguay (n=3340)	
	Agree vs. Disagree	Neutral vs. Disagree	Agree vs. Disagree	Neutral vs. Disagree
<b>Exposure to SHS in restaurants and cafes</b>				
<b>Exposure to SHS</b>				
Not exposed to SHS	1	1	1	1
Exposed to SHS	0.95 [0.54-1.65]	0.75 [0.35-1.62]	1.03 [0.31-3.46]	0 [0-0]
Not exposed to the smoke-free policy	0.7 [0.51-0.94]	1.39 [0.91-2.13]	1.53 [0.63-3.69]	1.09 [0.28-4.26]
<b>Income (quartile)</b>				
1	0.82 [0.52-1.29]	0.72 [0.39-1.34]	0.93 [0.35-2.42]	0.6 [0.11-3.29]
2	0.83 [0.54-1.28]	0.86 [0.48-1.54]	1.2 [0.46-3.09]	0.55 [0.12-2.52]
3	0.77 [0.5-1.18]	0.77 [0.42-1.43]	0.66 [0.25-1.75]	0.24 [0.04-1.36]
4	1	1	1	1
Don't know	1.26 [0.59-2.68]	1.25 [0.51-3.11]	0.8 [0.23-2.84]	1.05 [0.21-5.1]
<b>Education</b>				
No school or primary	0.77 [0.47-1.27]	0.77 [0.37-1.58]	1.47 [0.44-4.89]	0.36 [0.05-2.55]
Middle school	0.77 [0.48-1.24]	0.89 [0.44-1.79]	0.94 [0.4-2.2]	0.59 [0.19-1.86]
High school, incomplete university	0.75 [0.47-1.21]	1.05 [0.53-2.09]	1.42 [0.58-3.48]	0.47 [0.12-1.73]
University graduate	1	1	1	1
<b>Age</b>	1 [0.99-1.01]	1 [0.99-1.01]	1.02 [0.99-1.04]	1.01 [0.98-1.06]
<b>Sex</b>				
Male	1	1	1	1
Female	1.11 [0.85-1.46]	1.22 [0.84-1.78]	1.04 [0.49-2.21]	1.08 [0.38-3.11]
<b>Addiction (Mexico)</b>				
non-daily	1	1		
less than 5	1.22 [0.87-1.69]	0.87 [0.55-1.38]		
5 to 10	1.42 [1.05-1.93]	1.47 [0.93-2.32]		
More than 10	1.68 [1.1-2.56]	1.29 [0.75-2.22]		
<b>Addiction (Uruguay)</b>			1.31 [1.02-1.67]	1.39 [1.02-1.89]
<b>Smoking status</b>				
Every day			1.14 [0.39-3.37]	0.94 [0.25-3.47]
Less than everyday			1	1

**Table B.9** Sensitivity analysis for the association between exposure to SHS in restaurants and cafes and marginalization of smokers (three level variables), 2008-2012 ITC Mexico, Uruguay Survey

Adjusted Risk ratios (95% CI)				
Perceived marginalization of smokers				
Variables	Mexico (n=6701)		Uruguay (n=3340)	
	Agree vs. Disagree	Neutral vs. Disagree	Agree vs. Disagree	Neutral vs. Disagree
<b>Exposure to SHS in restaurants and cafes</b>				
<b>Exposure to SHS</b>				
Not exposed to SHS	1	1	1	1
Exposed to SHS	0.91 [0.65-1.27]	0.84 [0.53-1.33]	1.09 [0.52-2.31]	0.67 [0.26-1.71]
Not exposed to the smoke-free policy	0.99 [0.8-1.23]	1.21 [0.95-1.55]	1.14 [0.82-1.59]	0.8 [0.53-1.2]
<b>Income (quartile)</b>				
1	1.33 [0.93-1.89]	1.2 [0.79-1.83]	0.98 [0.62-1.54]	0.79 [0.45-1.38]
2	1.09 [0.79-1.5]	1.08 [0.71-1.63]	1.01 [0.67-1.5]	0.83 [0.5-1.38]
3	0.98 [0.7-1.36]	0.99 [0.65-1.5]	0.75 [0.51-1.12]	0.69 [0.41-1.13]
4	1	1	1	1
Don't know	1 [0.65-1.54]	1.04 [0.63-1.7]	1.04 [0.57-1.92]	0.77 [0.4-1.47]
<b>Education</b>				
No school or primary	1.24 [0.87-1.77]	1.17 [0.76-1.82]	0.77 [0.44-1.34]	0.69 [0.37-1.28]
Middle school	1.19 [0.84-1.69]	1.1 [0.72-1.68]	0.77 [0.48-1.23]	0.88 [0.53-1.48]
High school, incomplete university	1.22 [0.89-1.68]	1.34 [0.89-2]	0.91 [0.55-1.51]	0.65 [0.39-1.08]
University graduate	1	1	1	1
<b>Age</b>	1.01 [1-1.01]	1 [1-1.01]	1.01 [1-1.02]	1 [0.99-1.01]
<b>Sex</b>				
Male	1	1	1	1
Female	0.92 [0.75-1.11]	0.92 [0.71-1.17]	1.01 [0.74-1.38]	0.93 [0.64-1.35]
<b>Addiction (Mexico)</b>				
non-daily	1	1		
less than 5	1.25 [0.97-1.63]	1 [0.71-1.4]		
5 to 10	1.09 [0.85-1.41]	0.99 [0.72-1.36]		
More than 10	1.17 [0.84-1.63]	0.72 [0.48-1.08]		
<b>Addiction (Uruguay)</b>			1.1 [1-1.2]	0.98 [0.88-1.1]
<b>Smoking status</b>				
Every day			0.58 [0.34-0.99]	0.9 [0.51-1.58]
Less than everyday			1	1

**Table B.10** Sensitivity analysis for the association between exposure to SHS in bars and feeling uncomfortable about smoking (three level variables), 2008-2012 ITC Mexico, Uruguay Survey

Adjusted Risk ratios (95% CI)				
Feeling uncomfortable				
Variables	Mexico (n=6701)		Uruguay (n=3340)	
	Agree vs. Disagree	Neutral vs. Disagree	Agree vs. Disagree	Neutral vs. Disagree
<b>Exposure to SHS in bars</b>				
<b>Exposure to SHS</b>				
Not exposed to SHS	1	1	1	1
Exposed to SHS	0.93 [0.65-1.33]	0.81 [0.53-1.25]	0.82 [0.4-1.67]	1.56 [0.46-5.27]
Not exposed to the smoke-free policy	0.85 [0.62-1.18]	0.83 [0.57-1.2]	0.85 [0.63-1.15]	0.79 [0.52-1.19]
<b>Income (quartile)</b>				
1	1.19 [0.82-1.72]	1.24 [0.77-2]	0.74 [0.45-1.21]	0.54 [0.26-1.13]
2	0.91 [0.64-1.28]	1.01 [0.63-1.61]	0.73 [0.5-1.07]	0.53 [0.26-1.08]
3	0.96 [0.69-1.35]	1 [0.64-1.57]	0.94 [0.61-1.45]	0.63 [0.33-1.23]
4	1	1	1	1
Don't know	0.94 [0.59-1.47]	1.03 [0.57-1.88]	0.63 [0.36-1.1]	0.79 [0.36-1.72]
<b>Education</b>				
No school or primary	0.96 [0.65-1.42]	1.18 [0.76-1.85]	0.77 [0.45-1.31]	0.59 [0.28-1.24]
Middle school	1.13 [0.79-1.63]	1.28 [0.84-1.96]	0.83 [0.53-1.29]	0.94 [0.5-1.74]
High school, incomplete university	1.2 [0.85-1.69]	1.58 [1.04-2.39]	0.88 [0.57-1.35]	0.86 [0.47-1.56]
University graduate	1	1	1	1
<b>Age</b>	1 [0.99-1.01]	1 [0.99-1.01]	1 [0.99-1.01]	1 [0.98-1.02]
<b>Sex</b>				
Male	1	1	1	1
Female	1.15 [0.92-1.43]	0.96 [0.73-1.26]	1.02 [0.72-1.46]	1.36 [0.81-2.27]
<b>Addiction (Mexico)</b>				
non-daily	1	1		
less than 5	1.11 [0.82-1.5]	0.93 [0.66-1.32]		
5 to 10	1.09 [0.81-1.47]	1.21 [0.86-1.71]		
More than 10	1.13 [0.79-1.6]	0.91 [0.58-1.43]		
<b>Addiction (Uruguay)</b>			1.05 [0.96-1.16]	0.93 [0.81-1.07]
<b>Smoking status</b>				
Every day			1.25 [0.73-2.14]	1.19 [0.54-2.63]
Less than everyday			1	1

**Table B.11** Sensitivity analysis for the association between exposure to SHS in bars and perceiving a negative stereotype of smokers (three level variables), 2008-2012 ITC Mexico, Uruguay Survey

Adjusted Risk ratios (95% CI)				
Negative stereotypes of smokers				
Variables	Mexico (n=6701)		Uruguay (n=3340)	
	Agree vs. Disagree	Neutral vs. Disagree	Agree vs. Disagree	Neutral vs. Disagree
<b>Exposure to SHS in restaurants and cafes</b>				
<b>Exposure to SHS in bars</b>				
<b>Exposure to SHS</b>				
Not exposed to SHS	1	1	1	1
Exposed to SHS	1.07 [0.7-1.66]	0.78 [0.41-1.49]	1.28 [0.44-3.64]	0.31 [0.01-7.41]
Not exposed to the smoke-free policy	0.69 [0.46-1.04]	0.86 [0.48-1.53]	1.25 [0.63-2.48]	1.14 [0.43-2.97]
<b>Income (quartile)</b>				
1	0.8 [0.51-1.24]	0.8 [0.43-1.47]	0.99 [0.41-2.34]	0.6 [0.12-2.83]
2	0.82 [0.54-1.25]	0.94 [0.53-1.67]	1.23 [0.51-2.96]	0.53 [0.12-2.34]
3	0.75 [0.49-1.15]	0.81 [0.43-1.51]	0.67 [0.25-1.75]	0.24 [0.04-1.33]
4	1	1	1	1
Don't know	1.26 [0.6-2.62]	1.33 [0.54-3.29]	0.84 [0.24-2.88]	1.03 [0.22-4.87]
<b>Education</b>				
No school or primary	0.72 [0.44-1.18]	0.89 [0.43-1.83]	1.69 [0.44-6.5]	0.37 [0.04-2.93]
Middle school	0.73 [0.45-1.18]	0.99 [0.49-1.99]	1.01 [0.39-2.63]	0.61 [0.18-2.12]
High school, incomplete university	0.72 [0.45-1.16]	1.1 [0.55-2.17]	1.46 [0.58-3.66]	0.46 [0.12-1.73]
University graduate	1	1	1	1
<b>Age</b>	1.01 [1-1.02]	1 [0.98-1.02]	1.02 [0.99-1.04]	1.01 [0.97-1.06]
<b>Sex</b>				
Male	1	1	1	1
Female	1.19 [0.9-1.57]	1.2 [0.82-1.76]	1.05 [0.48-2.26]	1.08 [0.37-3.14]
<b>Addiction (Mexico)</b>				
non-daily	1	1		
less than 5	1.21 [0.87-1.67]	0.88 [0.56-1.39]		
5 to 10	1.39 [1.03-1.89]	1.5 [0.95-2.38]		
More than 10	1.66 [1.09-2.55]	1.31 [0.76-2.26]		
<b>Addiction (Uruguay)</b>			1.31 [1.03-1.67]	1.39 [1.02-1.88]
<b>Smoking status</b>				
Every day			1.12 [0.39-3.22]	0.92 [0.25-3.33]
Less than everyday			1	1

**Table B.12** Sensitivity analysis for the association between exposure to SHS in bars and marginalization of smokers (three level variables), 2008-2012 ITC Mexico, Uruguay Survey

Adjusted Risk ratios (95% CI)				
Perceived marginalization of smokers				
Variables	Mexico (n=6701)		Uruguay (n=3340)	
	Agree vs. Disagree	Neutral vs. Disagree	Agree vs. Disagree	Neutral vs. Disagree
<b>Exposure to SHS in bars</b>				
<b>Exposure to SHS</b>				
Not exposed to SHS	1	1	1	1
Exposed to SHS	0.91 [0.66-1.25]	0.76 [0.53-1.08]	0.98 [0.51-1.9]	1.48 [0.61-3.6]
Not exposed to the smoke-free policy	0.94 [0.72-1.24]	0.89 [0.64-1.24]	1.2 [0.88-1.65]	0.94 [0.67-1.31]
<b>Income (quartile)</b>				
1	1.33 [0.93-1.9]	1.27 [0.84-1.91]	0.98 [0.62-1.54]	0.74 [0.42-1.29]
2	1.09 [0.8-1.5]	1.12 [0.74-1.69]	1.01 [0.67-1.5]	0.8 [0.49-1.32]
3	0.98 [0.7-1.36]	1.02 [0.67-1.54]	0.75 [0.5-1.12]	0.68 [0.41-1.12]
4	1	1	1	1
Don't know	1 [0.66-1.53]	1.07 [0.65-1.75]	1.05 [0.58-1.89]	0.76 [0.4-1.44]
<b>Education</b>				
No school or primary	1.25 [0.87-1.78]	1.28 [0.82-2]	0.78 [0.44-1.38]	0.63 [0.34-1.16]
Middle school	1.2 [0.85-1.69]	1.16 [0.76-1.78]	0.77 [0.48-1.24]	0.84 [0.51-1.36]
High school, incomplete university	1.22 [0.89-1.68]	1.37 [0.91-2.05]	0.91 [0.55-1.51]	0.62 [0.38-1.02]
University graduate	1	1	1	1
<b>Age</b>	1.01 [1-1.01]	1 [1-1.01]	1.01 [1-1.02]	1 [0.99-1.01]
<b>Sex</b>				
Male	1	1	1	1
Female	0.91 [0.75-1.11]	0.9 [0.7-1.15]	0.99 [0.72-1.36]	0.97 [0.65-1.44]
<b>Addiction (Mexico)</b>				
non-daily	1	1		
less than 5	1.26 [0.97-1.63]	1.01 [0.72-1.41]		
5 to 10	1.1 [0.85-1.41]	1.01 [0.73-1.39]		
More than 10	1.17 [0.84-1.63]	0.73 [0.49-1.09]		
<b>Addiction (Uruguay)</b>			1.1 [1-1.2]	0.98 [0.88-1.1]
<b>Smoking status</b>				
Every day			0.58 [0.34-0.99]	0.9 [0.51-1.59]
Less than everyday			1	1

**Table B.13** Sensitivity analysis for the association between reading HWLs on cigarette packages (continuous measure) and feeling uncomfortable about smoking, 2008-2012 ITC Mexico, Uruguay Survey

Adjusted Risk ratios (95% CI)				
Variables	Mexico (n=6701)		Uruguay (n=3340)	
	Unadjusted	Adjusted*	Unadjusted	Adjusted*
<b>Feeling uncomfortable</b>				
<b>Attention to HWL</b>	1.26 [1.16-1.35]	1.24 [1.15-1.34]	1.16 [1.06-1.29]	1.18 [1.07-1.31]
<b>Income (quartile)</b>				
1		1.08 [0.87-1.35]		0.84 [0.58-1.23]
2		0.9 [0.73-1.1]		0.86 [0.65-1.15]
3		0.96 [0.78-1.18]		1.07 [0.78-1.47]
4		1		1
Don't know		0.91 [0.7-1.19]		0.7 [0.47-1.03]
<b>Education</b>				
No school or primary		0.91 [0.71-1.18]		0.81 [0.55-1.2]
Middle school		1.05 [0.82-1.34]		0.79 [0.56-1.11]
High school, incomplete university		1 [0.79-1.27]		0.86 [0.62-1.21]
University graduate		1		1
<b>Age</b>		1 [0.99-1]		1 [0.99-1.01]
<b>Sex</b>				
Male		1		1
Female		1.14 [0.99-1.31]		0.94 [0.74-1.19]
<b>Addiction (Mexico)</b>				
non-daily		1		
less than 5		1.14 [0.95-1.36]		
5 to 10		1 [0.84-1.19]		
More than 10		1.17 [0.93-1.47]		
<b>Addiction (Uruguay)</b>				
<b>Smoking status</b>				1.08 [1.01-1.16]
Every day				1.22 [0.83-1.8]
Less than everyday				1

**Table B. 14** Sensitivity analysis for the association between reading HWLs on cigarette packages (continuous measure) and perceiving a negative stereotype of smokers, 2008-2012 ITC Mexico, Uruguay Survey

Adjusted Risk ratios (95% CI)				
Variables	Mexico (n=6701)		Uruguay (n=3340)	
	Unadjusted	Adjusted*	Unadjusted	Adjusted*
<b>Negative stereotype of smokes</b>				
<b>Attention to HWL</b>	1.12 [1.03-1.22]	1.12 [1.02-1.22]	1.15 [0.95-1.38]	1.1 [0.91-1.35]

<b>Income (quartile)</b>		
1	0.85 [0.65-1.12]	1.24 [0.59-2.58]
2	0.81 [0.63-1.05]	1.56 [0.89-2.73]
3	0.81 [0.62-1.06]	0.96 [0.51-1.81]
4	1	1
Don't know	1.02 [0.69-1.5]	0.84 [0.43-1.62]
<b>Education</b>		
No school or primary	0.72 [0.52-0.99]	2.48 [1.16-5.29]
Middle school	0.7 [0.51-0.96]	1.24 [0.73-2.11]
High school, incomplete university	0.68 [0.5-0.94]	1.92 [1.09-3.38]
University graduate	1	1
<b>Age</b>	1 [0.99-1]	1.01 [1-1.03]
<b>Sex</b>		
Male	1	1
Female	1.01 [0.86-1.2]	1 [0.66-1.53]
<b>Addiction (Mexico)</b>		
non-daily	1	
less than 5	1.29 [1.04-1.6]	
5 to 10	1.15 [0.95-1.4]	
More than 10	1.46 [1.11-1.92]	
<b>Addiction (Uruguay)</b>		1.16 [1.02-1.32]
<b>Smoking status</b>		
Every day		1.2 [0.65-2.24]
Less than everyday		1

**Table B.15** Sensitivity analysis for the association between reading HWLs on cigarette packages (continuous measure) and perceiving that smokers are marginalized, 2008-2012 ITC Mexico, Uruguay Survey

Adjusted Risk ratios (95% CI)

Variables	Mexico (n=6701)		Uruguay (n=3340)	
	Unadjusted	Adjusted*	Unadjusted	Adjusted*
<b>Perceived marginalization of smokers</b>				
<b>Attention to HWL</b>	1.24 [1.15-1.33]	1.25 [1.15-1.35]	1.05 [0.95-1.15]	1.05 [0.96-1.16]
<b>Income (quartile)</b>				
1		1.23 [0.99-1.53]		1.1 [0.79-1.54]
2		1.05 [0.86-1.29]		1.09 [0.83-1.45]
3		0.97 [0.79-1.2]		0.85 [0.61-1.18]
4		1		1
Don't know		0.98 [0.75-1.29]		1.17 [0.77-1.77]
<b>Education</b>				



No school or primary	1.16 [0.91-1.48]	0.91 [0.61-1.37]
Middle school	1.16 [0.93-1.46]	0.83 [0.58-1.19]
High school, incomplete university	1.09 [0.87-1.36]	1.04 [0.72-1.52]
University graduate	1	1
<b>Age</b>	1 [1-1.01]	1.01 [1.01-1.02]
<b>Sex</b>		
Male	1	1
Female	0.93 [0.82-1.07]	1.03 [0.83-1.28]
<b>Addiction (Mexico)</b>		
non-daily	1	
less than 5	1.25 [1.05-1.49]	
5 to 10	1.1 [0.93-1.29]	
More than 10	1.33 [1.07-1.65]	
<b>Addiction (Uruguay)</b>		1.11 [1.04-1.18]
<b>Smoking status</b>		
Every day		0.6 [0.41-0.89]
Less than everyday		1

**Table B.16** Sensitivity analysis for the association between reading HWLs on cigarette packages (categorical variable) and feeling uncomfortable about smoking, 2008-2012 ITC Mexico, Uruguay Survey

Adjusted Risk ratios (95% CI)				
Variables	Mexico (n=6701)		Uruguay (n=3340)	
	Unadjusted	Adjusted*	Unadjusted	Adjusted*
<b>Feeling uncomfortable</b>				
<b>Attention to HWL</b>				
Very often	1.99 [1.55-2.57]	1.91 [1.48-2.46]	1.62 [1.18-2.22]	1.69 [1.22-2.33]
Often	1.6 [1.31-1.95]	1.56 [1.28-1.9]	1.45 [1.09-1.94]	1.51 [1.13-2.01]
Once in a while	1.27 [1.06-1.51]	1.24 [1.04-1.48]	1.42 [1.11-1.83]	1.45 [1.12-1.87]
Never	1	1	1	1
<b>Income (quartile)</b>				
1		1.08 [0.87-1.35]		0.84 [0.58-1.23]
2		0.9 [0.73-1.1]		0.86 [0.64-1.14]
3		0.96 [0.78-1.18]		1.06 [0.77-1.46]
4		1		1
Don't know		0.91 [0.7-1.19]		0.7 [0.48-1.03]
<b>Education</b>				
No school or primary		0.91 [0.71-1.18]		0.81 [0.55-1.19]
Middle school		1.05 [0.82-1.34]		0.79 [0.56-1.1]
High school, incomplete university		1 [0.79-1.27]		0.86 [0.61-1.2]

University graduate	1	1
<b>Age</b>	1 [0.99-1]	1 [0.99-1.01]
<b>Sex</b>		
Male	1	1
Female	1.14 [0.99-1.31]	0.94 [0.75-1.19]
<b>Addiction (Mexico)</b>		
non-daily	1	
less than 5	1.14 [0.95-1.36]	
5 to 10	1 [0.84-1.19]	
More than 10	1.17 [0.93-1.47]	
<b>Addiction (Uruguay)</b>		1.09 [1.01-1.16]
<b>Smoking status</b>		
Every day		1.2 [0.82-1.76]
Less than everyday		1

**Table B. 17** Sensitivity analysis for the association between reading HWLs on cigarette packages (categorical variable) and perceiving a negative stereotype of smokers, 2008-2012 ITC Mexico, Uruguay Survey

Adjusted Risk ratios (95% CI)				
Variables	Mexico (n=6701)		Uruguay (n=3340)	
	Unadjusted	Adjusted*	Unadjusted	Adjusted*
<b>Negative stereotype of smokes</b>				
<b>Attention to HWL</b>				
Very often	1.73 [1.24-2.42]	1.68 [1.19-2.36]	1.67 [0.91-3.06]	1.51 [0.79-2.86]
Often	0.99 [0.78-1.26]	1.01 [0.79-1.29]	1.21 [0.69-2.1]	1.11 [0.62-1.96]
Once in a while	0.95 [0.76-1.18]	0.97 [0.78-1.22]	1.27 [0.76-2.15]	1.28 [0.74-2.19]
Never	1	1	1	1
<b>Income (quartile)</b>				
1		0.86 [0.66-1.13]		1.23 [0.58-2.58]
2		0.82 [0.64-1.06]		1.55 [0.88-2.71]
3		0.81 [0.62-1.06]		0.95 [0.5-1.78]
4		1		1
Don't know		1.05 [0.71-1.54]		0.83 [0.43-1.61]
<b>Education</b>				
No school or primary		0.71 [0.52-0.98]		2.49 [1.17-5.29]
Middle school		0.7 [0.51-0.96]		1.25 [0.74-2.12]
High school		0.68 [0.5-0.93]		1.9 [1.08-3.36]
University graduate		1		1
<b>Age</b>		1 [0.99-1]		1.01 [1-1.03]
<b>Sex</b>				
Male		1		1
Female		1.01 [0.86-1.19]		1.01 [0.66-1.54]
<b>Addiction (Mexico)</b>				
non-daily		1		

less than 5	1.29 [1.04-1.6]	
5 to 10	1.15 [0.95-1.4]	
More than 10	1.43 [1.09-1.88]	
<b>Addiction (Uruguay)</b>		1.16 [1.02-1.32]
<b>Smoking status</b>		
Every day		1.2 [0.64-2.23]
Less than everyday		1

**Table B.18** Sensitivity analysis for the association between reading HWLs on cigarette packages (categorical variable) and perceiving that smokers are marginalized, 2008-2012 ITC Mexico, Uruguay Survey

Adjusted Risk ratios (95% CI)				
Variables	Mexico (n=6701)		Uruguay (n=3340)	
	Unadjusted	Adjusted*	Unadjusted	Adjusted*
<b>Perceived marginalization of smokers</b>				
<b>Attention to HWL</b>				
Very often	2.05 [1.57-2.67]	2.08 [1.58-2.72]	1.62 [1.18-2.22]	1.69 [1.22-2.33]
Often	1.4 [1.14-1.71]	1.44 [1.17-1.77]	1.45 [1.09-1.94]	1.51 [1.13-2.01]
Once in a while	1.21 [1.01-1.44]	1.22 [1.02-1.46]	1.42 [1.11-1.83]	1.45 [1.12-1.87]
Never	1	1	1	1
<b>Income (quartile)</b>				
1		1.23 [0.99-1.53]		0.84 [0.58-1.23]
2		1.06 [0.86-1.3]		0.86 [0.64-1.14]
3		0.98 [0.79-1.2]		1.06 [0.77-1.46]
4		1		1
Don't know		0.99 [0.75-1.3]		0.7 [0.48-1.03]
<b>Education</b>				
No school or primary		1.16 [0.91-1.48]		0.81 [0.55-1.19]
Middle school		1.16 [0.93-1.46]		0.79 [0.56-1.1]
High school		1.09 [0.87-1.36]		0.86 [0.61-1.2]
University graduate		1		1
<b>Age</b>		1 [1-1.01]		1 [0.99-1.01]
<b>Sex</b>				
Male		1		1
Female		0.93 [0.81-1.07]		1 [0.99-1.01]
<b>Addiction (Mexico)</b>				
non-daily		1		
less than 5		1.25 [1.05-1.49]		
5 to 10		1.1 [0.93-1.29]		
More than 10		1.32 [1.06-1.64]		
<b>Addiction (Uruguay)</b>				1.09 [1.01-1.16]
<b>Smoking status</b>				
Every day				1.2 [0.82-1.76]
Less than everyday				1

## APPENDIX C - EXTENDED TABLES FOR AIM 1

**Table C.1** Adjusted linear models for the association between feeling uncomfortable about smoking (lagged) and change in cigarette consumption, 2008-2012 ITC Mexico, Uruguay Survey

Adjusted models (95% CI)						
Smoking intensity						
Variables	Mexico (n=3236)			1374		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
<b>Feeling uncomfortable</b>	-0.21 [-0.72-0.29]	-0.23 [-0.75-0.27]	-0.25 [-0.76-0.26]	-0.63 [-2.06-0.78]	-0.63 [-2.06-0.78]	-0.59 [-1.99-0.81]
<b>Income (quartile)</b>						
1		0.63 [-0.14-1.4]	0.61 [-0.15-1.39]		-0.22 [-2.1-1.65]	-0.26 [-2.2-1.67]
2		0.03 [-0.71-0.78]	0.03 [-0.72-0.78]		-0.33 [-2.12-1.46]	-0.4 [-2.19-1.39]
3		0.54 [-0.27-1.36]	0.54 [-0.27-1.36]		-0.44 [-2.45-1.55]	-0.49 [-2.44-1.45]
4		1	1		1	1
Don't know		0.67 [-0.52-1.87]	0.7 [-0.5-1.9]		-0.35 [-4.06-3.34]	-0.51 [-4.25-3.22]
<b>Education</b>						
No school or primary		-0.34 [-1.3-0.62]	-0.31 [-1.27-0.64]		1.27 [-0.49-3.04]	1.32 [-0.52-3.18]
Middle school		0.17 [-0.65-1.01]	0.19 [-0.63-1.02]		0.42 [-1.29-2.13]	0.46 [-1.27-2.2]
High school, incomplete university		0.2 [-0.61-1.02]	0.19 [-0.62-1.01]		0.6 [-0.6-1.8]	0.64 [-0.55-1.83]
University graduate		1	1		1	1

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<b>Age</b>	0 [-0.01-0.01]	0 [-0.01-0.01]	-0.02 [-0.06-0.01]	-0.02 [-0.06-0.01]
<b>Sex</b>				
Male	1	1	1	1
Female	-0.19 [-0.63-0.24]	-0.2 [-0.64-0.23]	0.23 [-0.93-1.39]	0.23 [-0.94-1.4]
<b>Societal Norms</b>				
Disagree or neutral		1		1
Agree		-0.11 [-0.66-0.44]		0.12 [-1.18-1.42]
Strongly agree		0.16 [-0.63-0.96]		0.37 [-2.19-2.94]
<b>Close social network norms</b>				
Disagree or neutral		1		1
Agree		-0.18 [-0.88-0.51]		-0.08 [-1.77-1.6]
Strongly agree		0.03 [-0.73-0.79]		-0.68 [-2.58-1.22]

**Table C.2** Adjusted linear models for association between perceiving a negative stereotype of smokers (lagged) and change in cigarette consumption, 2008-2012 ITC Mexico, Uruguay Survey

**Adjusted models (95% CI)**

Variables	Mexico (n=3236)			Uruguay (n=1374)		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
<b>Smoking intensity</b>						
<b>Negative stereotype</b>	-0.52 [-1.26-0.21]	-0.56 [-1.32-0.19]	-0.56 [-1.32-0.19]	-0.22 [-2.37-1.92]	-0.07 [-2.11-1.95]	-0.05 [-2.07-1.96]
<b>Income (quartile)</b>						
1		0.64 [-0.12-1.41]	0.63 [-0.13-1.4]		-0.28 [-2.17-1.59]	-0.32 [-2.27-1.62]
2		0.04 [-0.69-0.79]	0.04 [-0.69-0.79]		-0.32 [-2.12-1.46]	-0.4 [-2.19-1.38]
3		0.56 [-0.24-1.37]	0.56 [-0.24-1.37]		-0.46 [-2.46-1.54]	-0.5 [-2.45-1.44]
4		1	1		1	1
Don't know		0.68 [-0.49-1.87]	0.71 [-0.47-1.9]		-0.35 [-4.07-3.36]	-0.51 [-4.27-3.24]
<b>Education</b>						

No school or primary	-0.37 [-1.34-0.59]	-0.35 [-1.31-0.6]	1.3 [-0.46-3.08]	1.37 [-0.48-3.23]
Middle school	0.15 [-0.68-0.99]	0.16 [-0.66-0.99]	0.42 [-1.28-2.12]	0.47 [-1.25-2.19]
High school, incomplete university	0.17 [-0.64-0.99]	0.16 [-0.64-0.98]	0.63 [-0.56-1.83]	0.67 [-0.51-1.86]
University graduate	1	1	1	1
<b>Age</b>	0 [-0.01-0.01]	0 [-0.01-0.01]	-0.02 [-0.06-0.01]	-0.02 [-0.07-0.01]
<b>Sex</b>				
Male	1	1	1	1
Female	-0.21 [-0.64-0.22]	-0.21 [-0.65-0.21]	0.25 [-0.9-1.4]	0.25 [-0.91-1.41]
<b>Societal Norms</b>				
Disagree or neutral		1		1
Agree		-0.11 [-0.66-0.43]		0.09 [-1.21-1.4]
Strongly agree		0.19 [-0.59-0.98]		0.36 [-2.21-2.94]
<b>Close social network norms</b>				
Disagree or neutral		1		1
Agree		-0.17 [-0.87-0.53]		-0.07 [-1.75-1.6]
Strongly agree		0 [-0.74-0.75]		-0.73 [-2.65-1.19]

**Table C.3** Adjusted linear models for the association between perceiving that smokers are marginalized (lagged) and change in cigarette consumption, 2008-2012 ITC Mexico, Uruguay Survey

**Adjusted models (95% CI)**

**Smoking intensity**

Variables	Mexico (n=3236)			Uruguay (n=1374)		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
<b>Marginalization</b>	-0.25 [-0.79-0.28]	-0.55 [-1.55-0.43]	-0.42 [-1.67-0.81]	0.39 [-0.84-1.64]	0.45 [-0.84-1.75]	0.5 [-0.84-1.84]

**Income (quartile)**

1	0.66 [-0.1-1.43]	0.65 [-0.11-1.41]	-0.33 [-2.23-1.56]	-0.37 [-2.34-1.59]
2	0.05 [-0.68-0.8]	0.05 [-0.68-0.79]	-0.34 [-2.12-1.44]	-0.42 [-2.21-1.36]
3	0.57 [-0.23-1.37]	0.57 [-0.23-1.37]	-0.45 [-2.44-1.54]	-0.49 [-2.43-1.44]
4	1	1	1	1
Don't know	0.7 [-0.48-1.89]	0.73 [-0.45-1.92]	-0.32 [-4.02-3.36]	-0.5 [-4.23-3.23]

**Education**

No school or primary	-0.35 [-1.31-0.6]	-0.32 [-1.27-0.62]	1.32 [-0.45-3.1]	1.4 [-0.47-3.29]
Middle school	0.17 [-0.65-1.01]	0.19 [-0.63-1.02]	0.39 [-1.3-2.09]	0.45 [-1.26-2.17]
High school, incomplete university	0.19 [-0.63-1.01]	0.18 [-0.63-0.99]	0.63 [-0.56-1.83]	0.67 [-0.51-1.86]
University graduate	1	1	1	1

**Age**

0 [-0.01-0.02]	0 [-0.01-0.01]	-0.02 [-0.07-0.01]	-0.02 [-0.07-0.01]
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**Sex**

Male	1	1	1	1
Female	-0.2 [-0.64-0.23]	-0.21 [-0.65-0.22]	0.24 [-0.9-1.39]	0.24 [-0.91-1.4]

**Societal Norms**

Disagree or neutral	1	1	1
Agree	-0.12 [-0.67-0.42]	0.05 [-1.28-1.39]	
Strongly agree	0.16 [-0.62-0.96]	0.29 [-2.32-2.92]	

**Close social network norms**

Disagree or neutral	1	1
Agree	-0.18 [-0.89-0.51]	-0.09 [-1.78-1.6]
Strongly agree	0.01 [-0.74-0.76]	-0.78 [-2.69-1.12]

**Table C.4** Adjusted risk ratios of the association between feeling uncomfortable about smoking (lagged) and risk of quit attempts within the last year, 2008-2012 ITC Mexico, Uruguay Survey

Adjusted Risk ratios (95% CI)						
Quit attempts						
Variables	Mexico (n=3331)			Uruguay (n=1600)		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
<b>Feeling uncomformable</b>						
Yes	1.15 [0.96-1.39]	1.07 [0.79-1.44]	1.06 [0.78-1.45]	1.16 [0.86-1.58]	1.28 [0.93-1.76]	1.2 [0.87-1.65]
No	1	1	1	1	1	1
<b>Income (quartile)</b>						
1		0.95 [0.55-1.64]	0.91 [0.52-1.57]		1.54 [0.92-2.58]	1.66 [1-2.75]
2		0.92 [0.55-1.54]	0.94 [0.56-1.58]		1.02 [0.69-1.5]	1.14 [0.77-1.68]
3		0.7 [0.43-1.14]	0.69 [0.42-1.13]		1.1 [0.68-1.78]	1.13 [0.7-1.83]
4		1	1		1	1
Don't know		0.67 [0.32-1.4]	0.7 [0.34-1.43]		0.68 [0.34-1.35]	0.81 [0.42-1.59]
<b>Education</b>						
No school or primary		0.54 [0.26-1.1]	0.56 [0.28-1.12]		0.99 [0.57-1.71]	0.86 [0.5-1.48]
Middle school		0.83 [0.46-1.49]	0.86 [0.48-1.52]		0.8 [0.5-1.29]	0.74 [0.46-1.19]
High school, incomplete university		0.92 [0.51-1.67]	0.92 [0.51-1.65]		1.35 [0.86-2.12]	1.29 [0.82-2.02]
University graduate		1	1		1	1
<b>Age</b>		1 [0.99-1.02]	1 [0.99-1.02]		0.99 [0.98-1]	0.99 [0.98-1]
<b>Sex</b>						
Male		1	1		1	1
Female		1.01 [0.73-1.4]	0.99 [0.71-1.38]		0.93 [0.68-1.28]	0.88 [0.65-1.2]
<b>Addiction (Mexico)</b>						
non-daily		1	1			



less than 5	0.62 [0.43-0.9]	0.61 [0.42-0.89]		
5 to 10	0.43 [0.29-0.64]	0.45 [0.3-0.65]		
More than 10	0.53 [0.3-0.92]	0.55 [0.31-0.98]		
<b>Addiction (Uruguay)</b>			0.78 [0.71-0.84]	0.77 [0.7-0.83]
<b>Societal Norms</b>				
Disagree or neutral		1		1
Agree		0.89 [0.66-1.21]		1.36 [1-1.86]
Strongly agree		0.77 [0.48-1.25]		1.78 [1.14-2.79]
<b>Close social network norms</b>				
Disagree or neutral		1		1
Agree		0.9 [0.6-1.35]		1.76 [1.15-2.71]
Strongly agree		1.58 [1.06-2.36]		2.95 [1.87-4.63]

**Table C.5** Adjusted risk ratios of the association between perceiving a negative stereotype of smokers (lagged) and risk of quit attempts within the last year, 2008-2012 ITC Mexico, Uruguay Survey

Adjusted Risk ratios (95% CI)						
Quit attempts						
Variables	Mexico (n=3331)			Uruguay (n=1600)		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
<b>Negative stereotype</b>						
Yes	1.32 [1.04-1.69]	1.31 [0.89-1.91]	1.3 [0.88-1.92]	0.81 [0.43-1.53]	0.88 [0.48-1.62]	0.84 [0.47-1.49]
No	1	1	1	1	1	1
<b>Income (quartile)</b>						
1		0.93 [0.54-1.6]	0.89 [0.52-1.54]		1.55 [0.93-2.6]	1.67 [1.01-2.77]
2		0.9 [0.54-1.5]	0.92 [0.54-1.54]		1.01 [0.69-1.49]	1.13 [0.76-1.67]
3		0.68 [0.42-1.11]	0.68 [0.41-1.11]		1.11 [0.68-1.81]	1.13 [0.7-1.85]
4		1	1		1	1

Don't know	0.67 [0.32-1.38]	0.69 [0.34-1.42]	0.67 [0.33-1.35]	0.81 [0.41-1.59]
<b>Education</b>				
No school or primary	0.55 [0.27-1.11]	0.57 [0.28-1.14]	0.98 [0.57-1.71]	0.86 [0.49-1.48]
Middle school	0.84 [0.46-1.51]	0.87 [0.48-1.55]	0.81 [0.5-1.3]	0.74 [0.46-1.2]
High school, incomplete university	0.93 [0.51-1.69]	0.93 [0.52-1.67]	1.34 [0.86-2.09]	1.28 [0.82-2]
University graduate	1	1	1	1
<b>Age</b>	1 [0.99-1.02]	1 [0.99-1.02]	0.99 [0.98-1]	0.99 [0.98-1]
<b>Sex</b>				
Male	1	1	1	1
Female	1.02 [0.73-1.41]	1 [0.72-1.39]	0.92 [0.67-1.27]	0.88 [0.64-1.2]
<b>Addiction (Mexico)</b>				
non-daily	1	1		
less than 5	0.61 [0.42-0.89]	0.61 [0.42-0.88]		
5 to 10	0.43 [0.29-0.63]	0.44 [0.3-0.65]		
More than 10	0.52 [0.3-0.92]	0.55 [0.31-0.97]		
<b>Addiction (Uruguay)</b>			0.78 [0.72-0.85]	0.77 [0.71-0.84]
<b>Societal Norms</b>				
Disagree or neutral		1		1
Agree		0.9 [0.67-1.22]		1.38 [1.01-1.88]
Strongly agree		0.78 [0.48-1.25]		1.8 [1.14-2.83]
<b>Close social network norms</b>				
Disagree or neutral		1		1
Agree		0.89 [0.59-1.34]		1.76 [1.14-2.7]
Strongly agree		1.57 [1.05-2.34]		2.98 [1.9-4.7]

**Table C.6** Adjusted risk ratios of the association between perceiving that smokers are marginalize (lagged) and risk of quit attempts within the last year, 2008-2012 ITC Mexico, Uruguay Survey

Adjusted Risk ratios (95% CI)						
Quit attempts						
Variables	Mexico (n=3331)			Uruguay (n=1600)		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
<b>Marginalization</b>						
Yes	1.13 [0.92-1.39]	1.05 [0.78-1.4]	1.03 [0.77-1.38]	1.42 [1.05-1.9]	1.56 [1.16-2.1]	1.41 [1.05-1.9]
No	1	1	1	1	1	1
<b>Income (quartile)</b>						
1		0.95 [0.55-1.63]	0.91 [0.52-1.57]		1.53 [0.9-2.58]	1.64 [0.99-2.74]
2		0.92 [0.55-1.53]	0.93 [0.56-1.56]		1.02 [0.69-1.5]	1.13 [0.77-1.67]
3		0.7 [0.43-1.14]	0.69 [0.42-1.13]		1.13 [0.69-1.84]	1.15 [0.7-1.88]
4		1			1	1
Don't know		0.67 [0.32-1.39]	0.69 [0.34-1.42]		0.68 [0.33-1.4]	0.82 [0.41-1.63]
<b>Education</b>						
No school or primary		0.54 [0.26-1.1]	0.56 [0.28-1.12]		1 [0.58-1.72]	0.87 [0.51-1.5]
Middle school		0.83 [0.46-1.49]	0.86 [0.48-1.53]		0.8 [0.49-1.28]	0.73 [0.45-1.19]
High school, incomplete university		0.93 [0.51-1.68]	0.93 [0.52-1.66]		1.34 [0.85-2.1]	1.28 [0.82-2.01]
University graduate		1	1		1	1
<b>Age</b>		1 [0.99-1.02]	1 [0.99-1.02]		0.99 [0.97-1]	0.99 [0.98-1]
<b>Sex</b>						
Male		1	1		1	1
Female		1.01 [0.73-1.41]	1 [0.71-1.39]		0.91 [0.66-1.25]	0.87 [0.64-1.19]
<b>Addiction (Mexico)</b>						
non-daily		1	1			
less than 5		0.61 [0.42-0.89]	0.61 [0.42-0.89]			

5 to 10	0.43 [0.29-0.64]	0.44 [0.3-0.65]		
More than 10	0.52 [0.3-0.92]	0.55 [0.31-0.98]		
<b>Addiction (Uruguay)</b>			0.77 [0.71-0.84]	0.76 [0.7-0.83]
<b>Societal Norms</b>				
Disagree or neutral		1		1
Agree		0.9 [0.66-1.21]		1.35 [0.99-1.84]
Strongly agree		0.77 [0.48-1.25]		1.73 [1.1-2.73]
<b>Close social network norms</b>				
Disagree or neutral		1		1
Agree		0.9 [0.6-1.35]		1.72 [1.12-2.65]
Strongly agree		1.59 [1.06-2.36]		2.85 [1.82-4.47]

**Table C.7** Adjusted risk ratios of the association between feeling uncomfortable about smoking (lagged) and successful quitting, 2008-2012 ITC Mexico

<b>Adjusted Risk ratios (95% CI)</b>			
<b>Successful quitting</b>			
	<b>Mexico (n=1484)</b>		
<b>Variables</b>	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>
<b>Feeling unconformable</b>			
Yes	0.69 [0.51-0.93]	0.7 [0.52-0.94]	0.69 [0.52-0.93]
No	1	1	1
<b>Income (quartile)</b>			
1		0.84 [0.53-1.32]	0.82 [0.52-1.29]
2		1.2 [0.77-1.86]	1.17 [0.76-1.82]
3		0.96 [0.61-1.51]	0.96 [0.61-1.5]
4		1	1
Don't know		0.61 [0.32-1.17]	0.62 [0.32-1.18]
<b>Education</b>			
No school or primary		1.05 [0.6-1.84]	1.02 [0.58-1.8]
Middle school		0.78 [0.45-1.33]	0.75 [0.44-1.28]
High school, incomplete university		0.72 [0.42-1.22]	0.69 [0.4-1.18]
University graduate		1	1
<b>Age</b>		0.99 [0.98-1.01]	1 [0.98-1.01]
<b>Sex</b>			
Male		1	1
Female		0.92 [0.67-1.25]	0.91 [0.67-1.24]
<b>Addiction (Mexico)</b>			
non-daily		1	1
less than 5		0.81 [0.57-1.16]	0.81 [0.56-1.16]
5 to 10		0.73 [0.49-1.09]	0.72 [0.48-1.06]
More than 10		0.38 [0.2-0.71]	0.37 [0.2-0.68]
<b>Addiction (Uruguay)</b>			
<b>Societal Norms</b>			
Disagree or neutral			1
Agree			1.21 [0.87-1.68]
Strongly agree			1.43 [0.84-2.43]
<b>Close social network norms</b>			
Disagree or neutral			1
Agree			1.22 [0.75-1.99]
Strongly agree			0.81 [0.47-1.4]

**Table C.8** Adjusted risk ratios of the association between perceiving a negative stereotype of smokers (lagged) and successful quitting, 2008-2012 ITC Mexico, Uruguay Survey

<b>Adjusted Risk ratios (95% CI)</b>						
<b>Successful quitting</b>						
<b>Variables</b>	<b>Mexico (n=1484)</b>			<b>Uruguay (n=804)</b>		
	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>
<b>Negative stereotype</b>						
Yes	0.95 [0.65-1.4]	0.98 [0.67-1.43]	0.95 [0.65-1.39]	0.43 [0.17-1.06]	0.52 [0.2-1.33]	0.53 [0.2-1.4]
No	1	1	1	1	1	1
<b>Income (quartile)</b>						
1		0.85 [0.53-1.34]	0.83 [0.53-1.32]		0.85 [0.44-1.62]	0.88 [0.46-1.69]
2		1.21 [0.78-1.88]	1.19 [0.76-1.84]		0.95 [0.55-1.67]	0.99 [0.56-1.74]
3		0.97 [0.62-1.53]	0.97 [0.62-1.52]		0.61 [0.32-1.16]	0.64 [0.33-1.24]
4		1	1		1	1
Don't know		0.63 [0.33-1.21]	0.64 [0.33-1.23]		1.17 [0.41-3.32]	1.32 [0.47-3.69]
<b>Education</b>						
No school or primary		1.05 [0.6-1.85]	1.03 [0.58-1.81]		0.53 [0.24-1.15]	0.53 [0.23-1.19]
Middle school		0.77 [0.45-1.32]	0.74 [0.43-1.26]		0.87 [0.46-1.64]	0.84 [0.43-1.64]
High school, incomplete university		0.71 [0.42-1.22]	0.69 [0.4-1.18]		0.77 [0.42-1.43]	0.75 [0.4-1.4]
University graduate		1	1		1	1
<b>Age</b>		0.99 [0.98-1.01]	0.99 [0.98-1.01]		1.02 [1-1.03]	1.02 [1-1.03]
<b>Sex</b>						
Male		1	1		1	1
Female		0.9 [0.66-1.23]	0.9 [0.66-1.23]		0.77 [0.5-1.18]	0.75 [0.48-1.15]
<b>Addiction (Mexico)</b>						
non-daily		1	1			

less than 5	0.8 [0.56-1.14]	0.8 [0.56-1.15]		
5 to 10	0.75 [0.5-1.12]	0.74 [0.49-1.1]		
More than 10	0.38 [0.2-0.72]	0.37 [0.2-0.69]		
<b>Addiction (Uruguay)</b>				
<b>Societal Norms</b>			0.78 [0.68-0.91]	0.78 [0.67-0.91]
Disagree or neutral		1		
Agree		1.17 [0.84-1.62]		
Strongly agree		1.43 [0.83-2.46]		
<b>Close social network norms</b>				
Disagree or neutral		1		
Agree		1.2 [0.73-1.97]		
Strongly agree		0.78 [0.44-1.36]		

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**Table C.9** Adjusted risk ratios of the association between perceiving that smokers are marginalized (lagged) and successful quitting, 2008-2012 ITC Mexico, Uruguay Survey

<b>Adjusted Risk ratios (95% CI)</b>						
<b>Smoking intensity</b>						
<b>Variables</b>	<b>Mexico (n=1484)</b>			<b>Uruguay (n=804)</b>		
	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>
<b>Marginalization</b>						
Yes	0.67 [0.5-0.9]	0.67 [0.5-0.89]	0.66 [0.5-0.89]	0.88 [0.57-1.36]	0.96 [0.61-1.52]	0.94 [0.59-1.48]
No	1	1	1	1	1	1
<b>Income (quartile)</b>						
1		0.85 [0.53-1.35]	0.83 [0.53-1.32]		0.85 [0.45-1.61]	0.89 [0.47-1.68]
2		1.19 [0.77-1.85]	1.17 [0.75-1.81]		0.98 [0.55-1.73]	1.01 [0.57-1.81]
3		0.96 [0.61-1.51]	0.96 [0.61-1.5]		0.6 [0.32-1.13]	0.63 [0.33-1.2]

4	1	1	1	1
Don't know	0.61 [0.32-1.16]	0.61 [0.32-1.18]	1.16 [0.42-3.18]	1.31 [0.48-3.59]
<b>Education</b>				
No school or primary	1.07 [0.61-1.89]	1.05 [0.59-1.86]	0.5 [0.23-1.09]	0.5 [0.22-1.13]
Middle school	0.77 [0.45-1.33]	0.75 [0.43-1.28]	0.84 [0.45-1.57]	0.81 [0.42-1.57]
High school, incomplete university	0.73 [0.43-1.25]	0.7 [0.41-1.21]	0.76 [0.41-1.39]	0.74 [0.4-1.37]
University graduate	1	1	1	1
<b>Age</b>	1 [0.98-1.01]	1 [0.98-1.01]	1.02 [1-1.03]	1.02 [1-1.03]
<b>Sex</b>				
Male	1	1	1	1
Female	0.9 [0.66-1.23]	0.9 [0.66-1.23]	0.78 [0.5-1.2]	0.75 [0.49-1.16]
<b>Addiction (Mexico)</b>				
non-daily	1	1		
less than 5	0.8 [0.56-1.15]	0.8 [0.56-1.15]		
5 to 10	0.74 [0.49-1.1]	0.72 [0.49-1.07]		
More than 10	0.38 [0.2-0.71]	0.36 [0.19-0.68]		
<b>Addiction (Uruguay)</b>			0.78 [0.67-0.9]	0.78 [0.67-0.91]
<b>Societal Norms</b>				
Disagree or neutral		1		1
Agree		1.17 [0.84-1.63]		0.9 [0.54-1.48]
Strongly agree		1.44 [0.84-2.45]		0.68 [0.36-1.29]
<b>Close social network norms</b>				
Disagree or neutral		1		1
Agree		1.22 [0.75-1.98]		1.43 [0.65-3.16]
Strongly agree		0.79 [0.46-1.37]		1.96 [0.91-4.18]



**Table C.10** Adjusted risk ratios of the association between feeling uncomfortable about smoking (lagged) and relapse, 2008-2012 ITC Mexico

<b>Adjusted Risk ratios (95% CI)</b>			
<b>Relapse</b>			
<b>Variables</b>	<b>Mexico (n=594)</b>		
	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>
<b>Feeling uncomfortable</b>			
Yes	0.68 [0.42-1.09]	0.7 [0.43-1.12]	0.7 [0.43-1.12]
No	1	1	1
<b>Income (quartile)</b>			
1		1.08 [0.47-2.49]	1.26 [0.55-2.87]
2		1.08 [0.47-2.51]	1.2 [0.51-2.79]
3		1.22 [0.54-2.72]	1.27 [0.57-2.8]
4		1	1
Don't know		1.17 [0.38-3.58]	1.34 [0.42-4.24]
<b>Education</b>			
No school or primary		0.86 [0.33-2.24]	0.84 [0.32-2.23]
Middle school		1.86 [0.75-4.64]	1.93 [0.78-4.82]
High school, incomplete university		1.05 [0.44-2.52]	1.1 [0.45-2.67]
University graduate		1	1
<b>Age</b>			
		0.98 [0.96-0.99]	0.97 [0.96-0.99]
<b>Sex</b>			
Male		1	1
Female		1.03 [0.62-1.72]	1.15 [0.7-1.91]
<b>Societal Norms</b>			
Disagree or neutral			1
Agree			0.83 [0.47-1.49]
Strongly agree			0.92 [0.47-1.82]
<b>Close social network norms</b>			
Disagree or neutral			1
Agree			0.82 [0.38-1.74]
Strongly agree			0.32 [0.14-0.71]

**Table C.11** Adjusted risk ratios of the association between perceiving a negative stereotype of smokers (lagged) and relapse, 2008-2012 ITC Mexico

<b>Adjusted Risk ratios (95% CI)</b>			
<b>Relapse</b>			
<b>Variables</b>	<b>Mexico (n=594)</b>		
	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>
<b>Negative stereotype</b>			
Yes	0.72 [0.35-1.49]	0.87 [0.44-1.72]	0.82 [0.43-1.58]
No	1	1	1
<b>Income (quartile)</b>			
1		1.13 [0.49-2.58]	1.31 [0.58-2.96]
2		1.14 [0.49-2.63]	1.26 [0.54-2.92]
3		1.28 [0.58-2.84]	1.32 [0.6-2.91]
4		1	1
Don't know		1.24 [0.39-3.88]	1.44 [0.45-4.57]
<b>Education</b>			
No school or primary		0.89 [0.34-2.29]	0.88 [0.33-2.3]
Middle school		1.86 [0.74-4.63]	1.94 [0.78-4.82]
High school, incomplete university		1.03 [0.43-2.45]	1.09 [0.45-2.62]
University graduate		1	1
<b>Age</b>			
		0.97 [0.96-0.99]	0.97 [0.96-0.99]
<b>Sex</b>			
Male		1	1
Female		1.02 [0.61-1.7]	1.13 [0.68-1.89]
<b>Societal Norms</b>			
Disagree or neutral			1
Agree			0.82 [0.46-1.46]
Strongly agree			0.92 [0.46-1.82]
<b>Close social network norms</b>			
Disagree or neutral			1
Agree			0.84 [0.39-1.77]
Strongly agree			0.32 [0.14-0.72]

**Table C.12** Adjusted risk ratios of the association between perceiving that smokers are marginalized (lagged) and relapse, 2008-2012 ITC Mexico

<b>Adjusted Risk ratios (95% CI)</b>			
<b>Relapse</b>			
<b>Variables</b>	<b>Mexico (n=594)</b>		
	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>
<b>Marginalization</b>			
Yes	0.85 [0.53-1.35]	0.89 [0.55-1.44]	0.91 [0.57-1.44]
No	1	1	1
<b>Income (quartile)</b>			
1		1.15 [0.5-2.62]	1.33 [0.59-3.02]
2		1.15 [0.5-2.67]	1.28 [0.55-2.96]
3		1.29 [0.57-2.88]	1.34 [0.6-2.96]
4		1	1
Don't know		1.25 [0.4-3.9]	1.45 [0.45-4.58]
<b>Education</b>			
No school or primary		0.89 [0.34-2.32]	0.87 [0.33-2.31]
Middle school		1.86 [0.74-4.7]	1.93 [0.77-4.87]
High school, incomplete university		1.03 [0.42-2.52]	1.08 [0.44-2.64]
University graduate		1	1
<b>Age</b>		0.97 [0.96-0.99]	0.97 [0.96-0.99]
<b>Sex</b>			
Male		1	1
Female		1.01 [0.6-1.68]	1.11 [0.67-1.85]
<b>Societal Norms</b>			
Disagree or neutral			1
Agree			0.81 [0.45-1.46]
Strongly agree			0.91 [0.46-1.8]
<b>Close social network norms</b>			
Disagree or neutral			1
Agree			0.84 [0.4-1.78]
Strongly agree			0.33 [0.15-0.72]