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ORIGINAL INVESTIGATION

Does Moralization Motivate Smokers to Quit? A Longitudinal Study of Representative Samples of Smokers in the United States and Denmark

Marie Helweg-Larsen PhD

Department of Psychology, Dickinson College, Carlisle, PA

Corresponding Author: Marie Helweg-Larsen, PhD, Department of Psychology, Dickinson College, PO Box 1773, Carlisle, PA 17013, USA. Telephone: 717-245-1562; Fax: 717-245-1971; E-mail: helwegm@dickinson.edu

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ABSTRACT

Introduction: Moralization refers to the gradual cultural and personal process by which objects or activities move from being morally neutral to morally contemptuous. Research suggests important cross-cultural differences in how smokers react to being targets of moralization. However, research has not examined whether smokers who agree with moralized sentiments about smoking are more willing to quit or reduce their smoking. Additionally, the mediating role of perceived personal risk has not been examined.

Methods: In this study, representative samples of smokers in Denmark (a smoking lenient country; $N = 429$) and the United States (a smoking prohibitive country; $N = 431$) completed surveys 6 months apart.

Results: As expected, Danish smokers (compared to U.S. smokers) moralized less and estimated that their personal risk of lung cancer was smaller. Furthermore, moralization at T1 predicted an increase in perceived personal risk at T2 (for Danish smokers and marginally for U.S. smokers), a decrease in smoking behaviors (for Danish smokers only), and an increase in quitting intentions (marginally for Danish smokers only). For Danish smokers, perceived personal risk mediated the relationship between moralization and quitting intentions.

Conclusions: Moralization predicted an increase in perceived personal risk, an increase in quitting intentions, and a reduction in smoking behaviors, especially for the Danish sample. Future research should examine the effects of moralization in different cultural contexts.

INTRODUCTION

When smokers are huddled around doorways obeying the rules to smoke outside, people walking by might give an annoyed cough or wave away the smoke indignantly. Such public displays of moralization have become common as smoking in much of the Western world has moved from an appropriate and cool behavior to one that is marginalized and moralized (cf. Brandt, 2007). Moralization is a process by which objects or activities move from being morally neutral to morally contemptuous (Rozin, 1997, 1999). Simply put, a behavior is moralized when it is considered inherently bad and not simply a personal choice or preference. Moralization entails the process by which a preference is converted to a value. Values are important because in contrast to mere preferences, values last longer, are more likely to be important to the self, and are transmitted from parents to children (Rozin & Singh, 1999). Because moralization involves moral judgments, it is different from just having negative attitudes toward an object or behavior. For example, favoring restrictions on smoking (e.g., Alamar & Glantz, 2006) or disapproving of the tobacco industry (e.g., tobacco industry denormalization; Malone, Grundy, & Bero, 2012) do not necessarily involve viewing smoking as a moral transgression, nor the smoker as morally reprehensible.

Moralization is an individual and a cultural process and it varies across cultures (Brandt & Rozin, 1997). For example, research shows that smoking is highly moralized in the United States (Rozin & Singh, 1999) and more so than in Denmark (Helweg-Larsen, 2014b). A key factor in the moralization process is the extent to which the behavior is harmful to others. Although it is immoral to harm other people by most moral systems, Western moral systems particularly focus on denial of other people's rights and harm to children or other innocent victims as especially morally indefensible (Rozin, Markwith, & Stoess, 1997). A brief historical comparison illustrates how harm narratives of smoking have played out differently in Denmark and the United States. Both countries have a strong focus on individual rights and personal autonomy and cigarette smoking was historically considered an acceptable, voluntary health risk. Thus, there was little support for limiting people's

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rights by interfering with such individual choices (Albæk, 2004; Brandt, 1998). However, in the United States, this perspective changed fundamentally following documentation of the health risks of passive smoking by the Surgeon General's reports in the 1970s and 1980s. These reports created an effective anticigarette movement based on the premise that no one has the right to impose health risks on other people (Brandt, 2007).

Denmark had no equivalent reports emphasizing the health risks that smoking imposed on others. Instead, research in the early 1990s showed that Danish life expectancy had stalled and that Denmark more than 15 years had dropped from 5th to 35th place in life expectancy of its citizens among Organization for Economic Cooperation and Development countries (Albæk, 2004). These findings caused considerable discussion in the Danish media and well as concern among politicians and health professionals (Albæk, 2004). The Danish Ministry of Health created a Mean Life Expectancy Committee to investigate the causes and the Committee's research revealed that tobacco was the main culprit of the stagnated Danish life expectancy (e.g., Juel, 1998, 2001, 2008). However, the reports did not focus (as the U.S. Surgeon's reports had done) on the specific dangers of passive smoking and harm to others. Thus, the reports did not provide the foundation for justifying moralized action against tobacco in the private or public domain.

Aside from the historical nature of tobacco politics, current comparative research shows that U.S. and Danish smokers differ in their perceptions of smoking when it comes to perceived harm to others. Recent research showed that Danish smokers were more skeptical than U.S. smokers about the harms of smoking to themselves and to other people (Helweg-Larsen, Tobias, & Cerban, 2010). Furthermore, although all smokers thought that children and pregnant women should be protected from exposure to smoke, Danish smokers were also more likely than U.S. smokers to feel that nonsmokers were already protected by antismoking laws as well as by social norms preventing nonsmokers from being exposed extensively to cigarette smoke (Helweg-Larsen et al., 2010). The Danish smokers thought that nonsmokers could avoid harm by simply removing themselves from the smoke (e.g., go outside, go to another room, etc.) and that passive smoke was more likely to be a nuisance than a health hazard. Thus, different perspectives on the dangers of smoking have likely contributed to cross-cultural differences in how smoking was moved from a personal choice to a moral behavior.

Once an object or activity is moralized, a series of changes affecting individuals and societies occur. Governments act to limit or prohibit the moral entity, other institutions such as schools or health care facilities make changes to support the moralized changes, scientific communities fund and promote research that confirms the moral status, and individual moral censure occurs such as expressions of disgust or irritation toward smokers (Rozin, 1999). Thus, as moralization increases, greater antismoking communication and activity result from governments, public health officials, physicians, schools, media, newspapers, companies, and private discourse. These communications typically contain information about the dangers of smoking because people are most comfortable supporting their arguments or restrictions with known scientific facts about the dangers of smoking (Katz, 1997). Consistent with this argument, one would expect smokers to view their personal risk of smoking as greater in countries with more smoking moralization (such as the United States) compared with countries with less smoking moralization (such as Denmark). Research supports this hypothesized association (Helweg-Larsen, 2014b; Helweg-Larsen & Nielsen, 2009). Furthermore, one would expect that the more individual smokers agree with moralized sentiments, the more they will come to see smoking as personally dangerous. This hypothesis was tested in the present study.

The final hypothesis examined here is whether individual agreement with moralized sentiments predicts greater willingness to reduce or quit smoking. On the one hand, smokers in the face of social rejection may band together and become even more committed to their smoking. Preliminary evidence supporting this possibility comes from an interview study with Danish and U.S. smokers where some smokers said that they reacted this way to moralization (Helweg-Larsen et al., 2010). On the other hand, moralization may lead to risk-reducing behaviors among smokers because smokers want to avoid being the victims of moralization (something smokers strongly dislike; Helweg-Larsen et al., 2010). In support of this possibility, several studies have found that some moralized sentiments predict willingness to quit. Specifically, research has found that smoker stigma (Stuber, Galea, & Link, 2009) and smoker shame (Kim & Shanahan, 2003) were associated with greater quitting intentions. However, the studies were cross-sectional and therefore could not test the critical question of whether stigma or shame motivated an increased willingness to quit. To examine whether a given belief motivates change, one would need either experimental or longitudinal data.

In the present study, the effects of moralization on perceived personal risk and smoking cessation behaviors were studied by comparing representative samples of smokers from the United States (a smoking-prohibitive culture where smoking is moralized) and Denmark (a smoking-lenient culture where smoking is less moralized). First, consistent with previous research, I hypothesized that Danish smokers (compared with American smokers) would moralize less and see their personal risk as lower. Second, I hypothesized that greater moralization would predict greater perceived personal risk at T2 as well as greater increase in perceived personal risk from T1 to T2. Finally, I hypothesized that moralization would predict increased willingness to quit and reduced smoking behaviors at T2. In addition, I examined perceived personal risk as a possible mediator in a relationship between moralization and quitting/smoking behaviors. Because there is a paucity of cross-cultural research on the last two hypotheses, I made no cross-cultural predictions.

METHODS

Participants

The samples were representative samples of Danish ($N = 554$) and U.S. smokers ($N = 595$) who completed an internet-based representative survey about their smoking habits and attitudes. Participants completed the first survey during November 2010 (Time 1) and were contacted 6 months later in May 2011 (Time 2) to complete the same survey again. At Time 2, 428 Danish and 431 U.S. participants participated, yielding response rates of 77% (Danish smokers) and 72% (U.S. smokers), $\chi^2(1) = 3.53$, $p = .035$. Thus, the final sample consisted of 428 Danish (194 men and 234 women) and 431 U.S. (230 men and 201 women) smokers.

The U.S. sample was a representative sample drawn by Knowledge Networks (www.gfk.com/us/Solutions/consumer-panels/Pages/GfK-KnowledgePanel.aspx). Knowledge Networks maintain an online research panel that is recruited using address-based and random-digit dialing sampling methodology. Household are provided with Internet access and computers, if needed. Potential participants cannot volunteer to participate but must be invited based on the random selection process. The panel of respondents matches the key demographic characteristics (sex, age, race, ethnicity, education, and religion) according to the U.S. census. The panel recruitment methodology creates a panel that is similar in representativeness to what can be obtained by using high quality random-digit dialing with cell phone sample supplementation. Once the person is recruited to the panel, he/she can be invited to participate in surveys based on previously identified characteristic (e.g., smoking status). Panel participants receive an E-mail inviting them to participate and receive several reminders to participate. Knowledge Networks uses a modest incentive program to encourage selected individuals to continue participating in the surveys such as raffles to win cash prices or other rewards. The Danish sample was drawn by TNS Gallup (http://gallup.dk/) using similar methodology to Knowledge Networks. The survey took approximately 10 min to complete.

The Danish sample had more women (54.7%) than the U.S. sample (46.6%), $\chi^2(1) = 5.55$, $p = .02$, and the Danish participants were older ($M = 50.79$, $SD = 14.47$) than the U.S. participants ($M = 47.96$, $SD = 13.57$), $t(857) = -2.96$, $p = .003$. Participants differed somewhat in their educational levels by country, $\chi^2(3) = 48.30$, $p < .001$. Specifically, participants in each of the four educational categories differed in how many had completed less than high school (27% of Danes, 15% of Americans), high school (29% of Danes, 43% of Americans), some college (25% of Danes, 30% of Americans), or bachelor's degree or higher (19% of Danes, 12% of Americans). Because the samples differed in age, gender composition, and educational levels, these three variables were controlled in some analyses when relevant (see below for details).

Nearly, all participants were born in their respective countries (97% of Americans and 99% of Danes) and everyone had lived in their respective country at least 16 years. In terms of identity, all Danes were Danish citizens and 99% spoke only Danish in the home (Danes identify by nationality and not by race). Among the Americans, everyone was a U.S. citizen and self-identified as White, non-Hispanic (76.8%), Black, non-Hispanic (9.5%), Hispanic (6.7%), and Other (7%).

To examine the effects of Attrition I compared at Time 1, participants who subsequently completed the Time 2 measures (the 428 Danish and 431 U.S. participants) with the participants who completed only the Time 1 measures (126 Danish and 164 U.S. participants). Independent samples t tests indicated that the two groups did not differ in their moralization, personal risk perception, smoking behaviors, or quitting intentions ($ps > .28$). However, the participants who completed both waves were older ($M = 49.37$) than participants who completed Wave 1 only ($M = 45.00$), $t(1147) = 3.50$, $p < .001$. Furthermore, in the group that completed both waves, men and women participated equally (50.6% were women) in contrast to the group that completed Wave 1 only where 59.7% were women, $\chi^2(1) = 7.07$, $p = .008$.

National statistics indicate that in 2010, the percentage of people who smoked every day or most days was somewhat higher in Denmark. Specifically, in 2010, 25% of Danes smoked (28% of men and 23% of women; National Institute of Public Health, 2013), whereas 19% of Americans smoked (22% men, 17% women; Centers for Disease Control and Prevention, 2011).

Materials

Materials consisted of an online questionnaire that assessed moralization, beliefs about health risks, smoking behaviors and intentions to quit, attitudes about smoking, and demographic information.

Moralization of Smoking Scale

This scale has eight items that measured factors: (a) *disgust* ("Smoking cigarettes is disgusting," "It is uncomfortable when people smoke indoors," and "Smoking exposes others to discomforts"), (2) *stigma* ("If I were choosing to hire one of two equally qualified applicants I would probably hire a nonsmoker over a smoker," "I would have no objection to my child or grandchild marrying a smoker," and "In looking for the ideal partner or spouse, I would not care if the person was a smoker"), and (3) *harm to others* ("Children should not be exposed to cigarette smoke at home" and "People should not be exposed to cigarette smoke against their will"). The scale shows good reliability and validity in Denmark and the United States (Helweg-Larsen, 2014b). The response scale for these items ranged from 1 (*strongly disagree*) to 4 (*strongly agree*) and items were reverse coded so that higher numbers indicated more moralization. Cronbach's alphas for the total moralization scale were .73 (United States) and .80 (Denmark) at Time 1 and .77 (United States) and .79 (Denmark) at Time 2.

Risk Perception

There are a variety of methods for assessing smokers' risk perceptions, although no single method is recommended (for a review, see Weinstein, 2001). I used one standard method of assessing personal risk, namely a conditional question given a high risk behavior (Weinstein & Nicolich, 1993; Weinstein, Rothman, & Nicolich, 1998). The conditional question is often better than a nonconditional question because it equalizes across participants smoking frequency as well as possible intentions to quit smoking. The question asked "Imagine that you in the future smoke a pack of cigarettes every day. What is then your chance of getting lung cancer in your life time." The response scale ranged from 1 (*very low*) to 5 (*very high*).

Smoking Cessation Intentions

Three questions assessed the intentions to quit: "Do you have plans to quit smoking" (1 = yes, this month, 2 = yes, in 1–6 months, 3 = yes, at some point in the future, 4 = no, I do not have plans to quit smoking; Prochaska & DiClemente, 1983), "Do you want to stop smoking" (1 = not at all, 2 = somewhat, 3 = a great deal), and "Would you like to smoke less" (1 = not at all, 2 = somewhat, 3 = a great deal). These items were combined into a quitting intention index that was created by reversing the first question so that for all three questions, higher numbers indicated greater interest in quitting smoking. Scores were then converted to Z-scores and averaged. Cronbach's alphas were .83 (United States) and .82 (Denmark) at Time 1 and .82 (United States) and .81 (Denmark) at Time 2.

Smoking Behaviors

Four questions assessed behaviors associated with smoking: "On average, how many cigarettes do you currently smoke per day," "On average, on days when you smoked [during the last 30 days], how many cigarettes did you usually smoke each day?" How often do you smoke your first cigarette of the day within 30 min of waking? (1 = never, 4 = always; Tate & Schmitz, 1993), "For how many days [out of the last 6 months] did you not smoke during your attempt to quit smoking?" (zero was recorded for participants who said that they had not attempted to quit smoking in the last 6 months). Research shows that online measures of smoking behaviors are reliable and valid (Ramo, Hall, & Prochaska, 2011). A smoking behavior index was created by reversing the last question (the number was subtracted from 180) so that for all four questions, higher numbers indicated greater smoking). Scores were then converted to Z-scores and averaged. Cronbach's alphas were .73 (United States) and .74 (Denmark) at Time 1 and .73 (United States) and .77 (Denmark) at Time 2.

Procedure

Participants who were U.S./Danish citizens, 18 or older, smoked every day or some days, and had smoked at least 100 cigarettes in their life time were invited to participate via E-mail. Furthermore, participants had to have lived at least 10 years in their respective country (everyone in both samples had). Eligibility criteria were asked again at the beginning of the Time 1 survey. At Time 2, the only eligibility criteria was that they had participated in the study at Time 1. Participants received two E-mails encouraging nonrespondents to participate.

The questionnaire was translated from Danish to English by a bilingual speaker (the author) and the translation was then independently checked by two other bilingual speakers for accuracy of translation and equivalency of meaning. Each survey was also pretested to confirm survey length and for quality control testing of the survey instrument.

All statistical analyses were conducted with IBM SPSS Statistics Version 20. The mediation analyses were conducted using the SPSS macro PROCESS Version 2.11 (Hayes, 2013).

RESULTS

Hypothesis 1: Compared With Americans, Do Danes Moralize Less and Think They Are Less at Risk?

Table 1 shows the mean scores for the key variables of moralization, risk perception, intentions to quit, and smoking behaviors. As hypothesized, Danes moralized less than did Americans at T1 and at T2. Danes also estimated a lower personal risk of lung cancer (if they smoked a pack a day in the future) than did Americans at T1 and at T2. This finding is consistent with past research comparing Danish and U.S. smokers (Helweg-Larsen & Nielsen, 2009; Helweg-Larsen et al., 2010). Furthermore, Danes compared with Americans at T1 and T2 engaged in more smoking behaviors overall, which included smoking more cigarettes and being more likely to smoke within 30 min of waking (a measure of addiction). Similarly, Danes compared with Americans at T1 and T2 were generally less interested in quitting, which included having fewer plans to quit, not wanting to stop smoking, and not wanting to smoke less.

Hypothesis 2: Does Moralization Predict an Increase in Perceived Personal Risk?

Hypothesis 2 examined whether moralization at T1 was associated with perceived personal risk at T2. As Table 2 shows, moralization (at T1) was correlated with perceived personal risk (at T2) for both Danes ($r = .38$) and U.S. ($r = .31$) smokers.

To examine whether moralization (T1) predicted a *change in* perceived personal risk from T1 to T2, I conducted a series of partial correlations. For Danes, the correlation between moralization at T1 and risk at T2 (controlling for risk at T1 as well as age, gender, and educational level) showed a significant relationship, $r(416) = .149$, $p = .002$. For Americans, that same correlation between moralization at T1 and risk at T2 (controlling for risk at T1 as well as age, gender, and level of education) approached significance, $r(413) = .089$, $p = .069$. That is, moralization predicted a change in personal risk perception (although only approaching significance for U.S. smokers) such that smokers who moralized at T1 also increased their sense of personal lung cancer risk over the next 6 months.

In sum, Hypothesis 2 was partly supported. As expected, moralization and perceived personal risk were clearly associated in both samples. Furthermore, results showed that for Danish but only marginally for U.S. smokers, moralization predicted a change in perceived personal risk from T1 to T2. That is, the more moralizing beliefs the smokers held at T1 the more they increased their sense of personal risk over the next 6 months.

Hypothesis 3: Does Moralization Predict Smoking Behaviors and Quitting Intentions?

Hypothesis 3 examined moralization as a predictor of smoking behaviors and quitting intentions. Table 2 shows that consistent with expectations, greater moralization (at T1) correlated with less smoking among Danes at T2 ($r = -.27$) and greater intentions to quit among Danes and Americans at T2 (Denmark: $r = .30$, United States: $r = .20$). Thus, as predicted, the correlational evidence generally supported the hypotheses that moralization is associated with smoking behaviors and quitting intentions.

The important question is whether moralization predicted a change in smoking behaviors or quitting intentions from T1 to T2. To examine this possibility, I first examined the moralization at T1 as a predictor of *smoking behaviors* (at T2) while controlling for education, age, gender, and smoking behavior at T1. Moralization predicted change in smoking behavior in the Danish sample, $r(419) = -.16$, $p = .001$, but not in the U.S. sample, $r(424) = -.02$, $p = .636$.

Next, I examined whether perceived personal risk at T1 mediated the relationship between moralization and smoking behaviors. I reasoned that Danish smokers who agreed with moralized sentiments might reduce their smoking because moralization is associated with greater perceived personal risk. To test the significance of the mediation, I conducted a simple mediation analysis using ordinary least squares path analysis (Model 4 in the SPSS macro PROCESS) that allows for control of potential covariates (Hayes, 2013). I controlled for age, education, and gender, and ran the mediation analysis to determine if perceived

Table 1. Responses to Key Questions for the Danish and U.S. Samples

	Time 1		Time 2	
	Denmark	United States	Denmark	United States
	M (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)
Moralization				
M1-Stigma: I would have no objection to my child or grandchild marrying a smoker (reverse scored).	1.82* (0.92)	2.39 (0.92)	1.93† (0.93)	2.44 (0.96)
M2-Stigma: If I were choosing to hire one of two equally qualified applicants I would probably hire a nonsmoker over a smoker.	1.88* (0.96)	2.08 (0.95)	1.89† (0.99)	2.12 (0.97)
M3-Stigma: In looking for the ideal partner or spouse, I would not care if the person was a smoker (reverse scored).	1.84* (1.00)	2.05 (0.89)	1.88† (0.99)	2.15 (0.87)
M4-Disgust: It is uncomfortable when people smoke indoors.	2.66 (0.99)	2.72 (0.92)	2.73 (0.95)	2.84 (0.90)
M5-Disgust: Smoking cigarettes is disgusting.	2.06* (0.90)	2.56 (0.93)	2.14† (0.90)	2.58 (0.91)
M6-Disgust: Smoking exposes others to discomforts.	3.03 (0.77)	3.04 (0.78)	3.04 (0.74)	3.08 (0.76)
M7-Harm: Children should not be exposed to cigarette smoke at home.	3.57* (0.65)	3.44 (0.74)	3.59† (0.65)	3.44 (0.76)
M8-Harm: People should not be exposed to cigarette smoke against their will.	3.40* (0.68)	3.21 (0.80)	3.43† (0.66)	3.26 (0.80)
Moralization of smoking scale total.	2.52* (0.55)	2.67 (0.53)	2.58† (0.55)	2.73 (0.54)
Perceived personal risk				
Risk: Imagine that you smoked a pack of cigarettes every day in the future. In this scenario, what is your chance of getting lung cancer in your lifetime? (1 = very low, 5 = very high).	3.48* (0.90)	3.92 (1.02)	3.52† (0.87)	3.88 (0.94)
Smoking behaviors				
BEH1: On average, how many cigarettes do you currently smoke per day	13.55* (8.85)	14.80 (9.20)	12.48† (9.23)	13.70 (10.46)
BEH2: On average, on days when you smoked [during the last 30 days], how many cigarettes did you usually smoke each day?	13.98 (8.39)	14.86 (9.77)	13.61 (8.77)	15.04 (10.25)
BEH3: For how many days did you not smoke during your attempt to quit smoking (within the last 6 months)? (zero recorded for people who had not attempted to quit)	5.57 (22.76)	3.47 (14.65)	8.20 (28.21)	8.08 (28.40)
BEH4: How often do you smoke your first cigarette of the day within 30 min of waking? (1 = never, 4 = always)	2.61* (1.24)	3.18 (1.02)	2.69† (1.23)	3.19 (1.01)
Total (Z-score)	−.11* (0.78)	0.10 (0.71)	−0.14† (0.81)	0.01 (0.88)
Quitting intentions				
INT1: Do you have plans to quit smoking? (1 = yes, this month, 2 = 6 months, 3 = some point in the future, 4 = no)	3.11* (0.86)	2.93 (0.81)	3.09 (0.89)	2.98 (0.82)
INT2: Do you want to stop smoking? (1 = not at all, 2 = somewhat, 3 = a great deal)	2.11* (0.70)	2.26 (0.71)	2.13† (0.68)	2.24 (0.65)
INT3: Would you like to smoke less? (1 = not at all, 2 = somewhat, 3 = a great deal)	2.27* (0.72)	2.47 (0.67)	2.30† (0.72)	2.39 (0.73)
Total (Z-score)	−0.09* (0.88)	0.09 (0.84)	−0.07† (0.88)	0.07 (0.83)

*Significant difference at T1 between U.S. and Danish sample, $p < .05$.
†Significant difference at T2 between U.S. and Danish sample, $p < .05$.

personal risk mediated the relationship between moralization and smoking behavior change. First, results indicated that moralization predicted perceived personal risk ($a = .5676$, $t = 7.75$, $p < .0001$) but perceived personal risk did not predict change in smoking behavior ($b = -.0511$, $t = -1.44$, $p = .15$). The direct effect of moralization on smoking behavior change was significant ($c' = -.1617$, $t = -2.84$, $p = .0048$) as it was in the earlier analysis. The key result of the mediation analysis is the indirect effect ($ab = .0290$), which was based on 1,000 bootstrapped bias-corrected samples with a 95% confidence interval (CI) from −0.0741 to 0.0076 ($n = 424$). Because the CI contained zero, there was no evidence of mediation. (This result is the same if the mediator is perceived personal risk at T2 instead of T1.) Thus, for Danes, perceived personal risk did not mediate the relationship between moralization and reduced smoking.

Second, I examined the dependent variable of *quitting intentions* using the same analysis strategy as above. While controlling for education, age, gender, and quitting intentions

Table 2. Intercorrelations Between Moralization, Risk Perception, Quitting Intentions, and Smoking Behaviors

Measure	1	2	3	4	5	6	7	8
1. Moralization T1	–	.40*	.28*	−.29*	.69*	.38*	.30*	−.27*
2. Risk perception T1	.40*	–	.28*	−.36*	.37*	.81*	.28*	−.37*
3. Quitting intentions T1	.27*	.38*	–	.02	.21*	.26*	.77*	−.06
4. Smoking behaviors T1	−.10*	−.19*	−.13*	–	−.24*	−.37*	.01	.71*
5. Moralization T2	.61*	.28*	.26*	−.12*	–	.35*	.24*	−.22*
6. Risk perception T2	.31*	.70*	.31*	−.15*	.30*	–	.27*	−.40*
7. Quitting intentions T2	.20*	.24*	.72*	.01	.29*	.38*	–	−.03
8. Smoking behaviors T2	−.09	−.12*	−.16*	.62*	−.08	−.15*	−.03	–

Note. Intercorrelations for Danish participants (*N*s = 396–554) are presented above the diagonal, and intercorrelations for the U.S. participants (*N*s = 382–588) are presented below the diagonal.
*$p < .01$.

at T1, the predictor variable was moralization (T1) and the outcome variable was quitting intentions (T2). Moralization marginally predicted change in quitting intentions in the Danish sample, $r(388) = .094$, $p = .063$, but not in the U.S. sample, $r(381) = -.020$, $p = .703$.

As before, I examined personal perceived risk as a mediator between moralization and increase in quitting intentions (in the Danish sample). I conducted a mediation analysis controlling for age, education, gender, and intentions at T1 to determine if perceived personal risk mediated the relationship between moralization and quitting intentions (for Danes only). First, results indicated that moralization predicted perceived personal risk ($a = .5409$, $t = 7.36$, $p < .0001$) and perceived personal risk predicted change in quitting intentions ($b = -.0981$, $t = 2.65$, $p = .009$). The direct effect of moralization on quitting intentions was not significant ($c' = .0445$, $t = 0.78$, $p = .44$). Again, the key result of the mediation analysis is the indirect effect ($ab = .0530$), which was based on 1,000 bootstrapped bias-corrected samples with a 95% CI from 0.0153 to 0.0970 ($n = 393$). Because the CI did not contain zero, there is evidence of mediation. (The mediation result is the same if the mediator is perceived personal risk at T2 instead of T1.) Thus, for Danes, perceived personal risk mediated the relationship between moralization and increased quitting intentions.

In sum, Danish but not American smokers who held moralized beliefs were more likely to have reduced their smoking behaviors and increased their quitting intentions 6 months later. For Danes, perceived personal risk mediated the relationship between moralization and increased quitting intentions but not the relationship between moralization and reduced smoking behaviors.

DISCUSSION

In this study, representative samples of smokers in Denmark (a smoking lenient country) and the United States (a smoking prohibitive country) completed surveys 6 months apart. As predicted, the results showed that Danish compared to U.S. smokers were less likely to endorse moralized beliefs and estimated their personal cancer risk as lower. Furthermore, as expected, moralization was associated for both Danes and Americans with perceived personal risk, smoking behaviors, and quitting intentions 6 months later. Finally, moralization predicted over time an increase in perceived personal risk (for Danes and marginally for Americans), a decrease in smoking behaviors (for Danes only), and an increase in quitting intentions (marginally for Danes only). For Danes, perceived personal risk mediated the relationship between moralization and quitting intentions. Thus, overall the predicted effects of moralization held for both Danish and American smokers but the predicted effects of moralization as a motivating agent of change were supported for the Danish and not the U.S. smokers.

As expected, Americans agreed more than did Danes with moralized sentiments about smoking. This finding is similar to results from community samples of U.S. and Danish smokers (Helweg-Larsen, 2014b). Furthermore, as hypothesized, Danish smokers compared with U.S. smokers were less likely to see smoking as personally dangerous. This finding is consistent with research results from youth samples where Danish smoked rated their personal risk of lung cancer as lower than U.S. smokers rated their personal risk (Helweg-Larsen & Nielsen, 2009). Similarly, an interview study with Danish and U.S. smokers showed that although both groups readily agreed that "everyone knows that smoking is dangerous," the U.S. smokers were able to readily list specific health consequences of smoking (e.g., stroke, heart disease, cancer, chronic obstructive pulmonary disease), whereas Danes listed fewer and more general consequences (e.g., a persistent cough) (Helweg-Larsen et al., 2010). The Danish smokers were also more likely to minimize the risks of smoking and express skepticism that smoking was really all that dangerous (Helweg-Larsen et al., 2010). Thus, consistent with previous research, the present results showed that Danish smokers disagreed more than did American smokers with moralized beliefs about smokers and evaluated their personal risk as lower.

The present research adds to these findings by showing the moralization predicted (across time) an increase in personal risk estimates. That is, the more smokers (marginally for U.S. smokers) agreed with moralized sentiments, the more they increased their estimates of personal risk over the next 6 months. As countries move toward moralization of smoking at different speeds and points in time (as appears to be the case for the United States and Denmark), the extent to which individual smokers adopt these moralized ideas is a predictor of believing that one is personally at risk. Smoking regulations are often accompanied by messages about the dangers of smoking and although no specific national tobacco measure was introduced in Denmark during this 6 month period, Denmark does have increased attention to smoking regulations in the work place and home. In fact, Danish smokers (more so than U.S. smokers) reported in an interview study that they

spend quite a bit of time figuring out and adjusting to the new smoking norms and expectations (Helweg-Larsen et al., 2010). This can help explain why moralized attitudes would predict a more robust change in perceived personal risk among Danes than Americans.

Moralization also predicted (for Danes only) an increase in quitting intentions (marginally significant) and a decrease in smoking behaviors. Perceived risk mediated the relationship between moralization and quitting intentions. Thus, contrary to interviews with smokers' own descriptions (Helweg-Larsen et al., 2010), moralization does appear to be associated with an increase in smoking cessation intentions. These results also point to the importance of conducting longitudinal research to examine the motivating effect of moralization on changing smoking behaviors. Had this study only examined these questions cross-sectionally, the evidence would point to the effects of moralization for both Danes and Americans, whereas the longitudinal result showed that moralization was only predictive of change for Danes and not Americans.

The predictive effects of moralization might be greater in Denmark because Danish smokers are experiencing a rapid change in the moral landscape of smoking in which smoking rates are falling, new antismoking policies are passed, and smoking norms are changing. Moralization might simply be more influential during periods of change in moralization (as in Denmark) as opposed to a relatively stable and fully moralized situation (as in the United States). A second reason concerns the composition of the present smokers in the two countries. As the number of smokers decline, the remaining smokers will likely be more addicted and less interested in quitting but also more immune to the moralized sentiments that might have convinced early quitters. Thus, the factors that reduce smoking from, for example, 28% to 20% of the population might be quite different from the factors that will reduce smoking rates from 18% to 10%. It is possible that as societies become more moralized, the extent to which one agrees with the moralized sentiments (whether about smoking, fatness, drug use, or something else) will become less predictive of behavior change.

The strengths of this study included the cross-culturally representative samples and the 6-month follow up. There were, however, several limitations. First, this study only examined two countries and can provide only a snapshot of these relationships at a given point in time. Smoking norms and behaviors are undergoing rapid change in many cultures—change that should be explored in future research. It is also important to examine multiple cultural contexts. For example, in immigrant communities, it is possible that as immigrants become more acculturated, their moralized beliefs will increase just like acculturation is associated with increased perceptions of risks of smoking (Helweg-Larsen & Stancioff, 2008). Second, overall the reported effects were small. This could be because there are a great many factors that determine smoking and quitting intentions. In addition, 6 months is a fairly short follow-up period in which relatively few smokers changed their smoking behaviors or intentions. Of course, even small effects can be important for reductions in smoking prevalence.

The present findings showed that agreeing with moralized sentiments predicted reduced smoking and more quitting intentions among Danish but not American smokers. However, just because moralization might be motivating to some smokers, it does not suggest that one ought to create public health campaigns, smoking cessation programs, or other activities that moralize (Bayer, 2008; Bayer & Stuber, 2006; Bell, Salmon, Bowers, Bell, & McCullough, 2010; Botelho & Fiscella, 2005). In future research, moralization and its consequences should be more fully examined. For example, in countries such as Denmark where people are more likely to think that smoking is not that dangerous and should not be moralized, such beliefs might make politicians (and others) less willing to pass tobacco control policies or increase their vulnerability to tobacco industry interference (Helweg-Larsen, 2014a).

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DECLARATION OF INTERESTS

None declared.

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