

Adolescents' Beliefs About the Risks Involved in Smoking "Light" Cigarettes

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ABSTRACT. *Background.* Light cigarettes have been marketed by the tobacco industry as being a healthier smoking choice, a safe alternative to cessation, and a first step toward quitting smoking altogether. Research, however, has failed to show a reduction in smoking-related health risks, an increase in rates of smoking cessation, a decrease in the amount of carbon monoxide or tar released, or a reduction in the rates of cardiovascular disease or lung cancer associated with light cigarette use, compared with regular cigarette use. Nevertheless, more than one-half of adolescent smokers in the United States smoke light cigarettes. This study is the first to investigate adolescents' perception of the risks associated with smoking light cigarettes, as well as adolescents' attitudes and knowledge about the delivery of tar and nicotine, health risks, social effects, addiction potential, and ease of cessation with light cigarettes, compared with regular cigarettes.

Design. Participants were 267 adolescents (mean age: 14.0 years) who completed a self-administered questionnaire during class time. After reading scenarios in which they imagined that they smoked regular or light cigarettes, participants estimated the chances that they would personally experience 7 smoking-related health risks and 3 addiction risks. Participants also responded to 14 items concerning their attitudes and knowledge about light cigarettes versus regular cigarettes.

Results. Participants thought that they would be significantly less likely to get lung cancer, have a heart attack, die from a smoking-related disease, get a bad cough, have trouble breathing, and get wrinkles when smoking light cigarettes, compared with regular cigarettes, for the rest of their lives. Furthermore, when participants were asked how long it would take to become addicted to the 2 cigarette types, they thought it would take significantly longer to become addicted to light versus regular cigarettes. Adolescents also thought that their chances of being able to quit smoking were higher with light versus regular cigarettes. Similarly, when participants were asked how easy it would be to quit smoking the 2 cigarette types, they thought it would be significantly easier for them to quit smoking light cigarettes than regular cigarettes. Adolescents agreed or strongly agreed that regular cigarettes deliver more tar than light cigarettes and that light cigarettes deliver less nicotine than regular cigarettes.

Conclusions. Overall, the results of this study show that adolescents hold misperceptions in both their personal risk estimates and their general attitudes about the health risks, addictive properties, and ease of cessation associated with light cigarettes. With a variety of light and ultralight cigarettes on the market, adolescents are led to think that there is a progression of safety levels to choose from when deciding which cigarettes to smoke. This illusion of control over health outcomes contributes to an underestimation of risks associated with smoking light cigarettes and supports these misperceptions. These results are of concern, given evidence suggesting that, if adolescents think they are less vulnerable to smoking-related health risks (ie, lung cancer), then they are more likely to initiate smoking. Furthermore, there is evidence that adolescents are not fully aware of the addictive nature of cigarettes and therefore think that they can experiment with smoking during adolescence without becoming addicted or experiencing any health consequences. The data presented here support concerns regarding smoking addiction; adolescents might be even more inclined to smoke light cigarettes to delay addiction. Without correct information about light cigarettes, adolescents are unable to make informed decisions about their smoking behaviors. The findings presented here strongly suggest that health care practitioners need to talk to their adolescent clients not only about the overall risks of smoking but also about the specific risks associated with smoking light cigarettes and other tobacco varieties, including the potential for addiction and long-term health consequences. Information shared with adolescents about light cigarettes, both individually by health care practitioners and at the population level via counter-advertising campaigns, may be successful in changing current misperceptions, and ultimately light cigarette smoking patterns, among youth. *Pediatrics* 2004;114:e445–e451. URL: www.pediatrics.org/cgi/doi/10.1542/peds.2004-0893; *smoking, light cigarettes, adolescents, youth.*

Light cigarettes were introduced in the 1950s in response to growing public concern about the health effects of smoking. Light cigarettes have been marketed by the tobacco industry as being a healthier smoking choice, a safe alternative to cessation, and a first step toward quitting smoking altogether. Research, however, has failed to show a reduction in smoking-related health risks,^{1,2} an increase in rates of smoking cessation,^{3,4} a decrease in the amounts of carbon monoxide^{2,5,6} or tar² released, or a reduction in the rates of cardiovascular disease or lung cancer^{1,7} associated with light cigarette use, compared with regular cigarette use. Nevertheless, a recent national survey of smokers found

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that 58.5% of adult smokers and 52.8% of adolescent smokers reported using light cigarettes.⁸

Despite clear data showing that light cigarettes are not a safe alternative to smoking, adults in the United States harbor misperceptions about the health risks associated with smoking light and ultralight cigarettes,^{2,9–13} with a large proportion of adult smokers thinking that such cigarettes deliver less tar and nicotine, produce milder sensations, reduce the health risks associated with smoking, and assist with smoking cessation.^{10,11} No research has explored attitudes, beliefs, and perceptions of risk regarding light cigarettes among adolescents. If adolescents, like adults, think that light cigarettes are less risky to their health and are easier to quit than regular cigarettes, then they too may be more willing to try and to continue smoking these perceived “safer” cigarettes. This assertion is supported by theories indicating that perceptions of risk are related to engagement in both health-compromising and health-promoting behaviors.^{14–22}

The present study addresses this gap in the literature by exploring adolescents’ perceptions of the risks associated with smoking light cigarettes. In addition, we assessed adolescents’ attitudes and knowledge about the delivery of tar and nicotine, health risks, social effects, addiction potential, and ease of cessation when smoking light cigarettes, compared with regular cigarettes. We hypothesized that adolescents would perceive light cigarettes to be less harmful to their health, to be less addictive, and to deliver less tar and nicotine than regular cigarettes. If these assertions are supported, then efforts to prevent adolescents’ tobacco use must include specific communication about the harmful nature of light cigarettes, in addition to all cigarette and tobacco varieties.

METHODS

Participants

Participants were 267 adolescents (mean age: 14.0 years; SD: 1.49 years) participating in a larger longitudinal study on the relationship between risk perceptions and tobacco use. The participants were ethnically diverse, with 56.8% of the participants describing themselves as white/non-Hispanic, 18.5% as Asian, 18.5% as Hispanic or Latino, 2.3% as Pacific Islander, 1.2% as African American, 1.5% as American Indian/Alaskan Native, and 1.2% as other. Participants’ mothers’ education, on average, was high, with 17.9% of the mothers having a professional degree, 6.1% having some education after college, 25.1% having a 4-year college degree, 20.5% having at least some college education, and 19.4% having a high school degree or less; 9.9% of the participants reported that they did not know their mothers’ education.

Participant Recruitment

Participants in the larger study were recruited from 2 northern California public high schools (schools A and B), during their 9th grade year, to take part in a longitudinal study of tobacco beliefs and smoking behaviors. Participants in school A were recruited in autumn 2001, and those in school B were recruited in autumn 2002. Interested participants signed the adolescent assent form, and parents signed the parental consent form. Of the 790 students who received consent packets (302 from school A and 488 from school B), 418 (53%) returned completed consent forms (79.5% and 36.5% consent rate for schools A and B). Of the 790 students who received consent packages, a total of 395 adolescents completed the baseline survey, for an overall response rate of 50% (75.5% response rate for school A and 34.2% response rate for school B).

Perceptions of light cigarettes were assessed in spring 2003, which corresponded to the second (school B, 9th grade) and fourth (school A, 10th grade) rounds of data collection; therefore, only those rounds of data are reported in this article. Overall, 200 participants from school A completed the fourth-round survey and 152 participants from school B completed the second-round survey, for a total of 352 participants (89.4% retention rate). Only participants who indicated that they had heard of light cigarettes were included in the analyses for the current report ($n = 267$), accounting for 75.8% of the total sample. There were no significant differences between the 2 schools with respect to gender or age at the time of recruitment; however, significant differences were found with respect to ethnicity ($\chi^2 = 57.3$, $df = 3$, $P < .001$) and mother’s education ($\chi^2 = 19.7$, $df = 8$, $P < .05$), with 1 school (school B) having fewer white/non-Hispanic students and lower levels of mothers’ education. However, we did not find any significant differences in the results for these 2 schools or any differences based on age; therefore, data for the 2 schools were combined.

Procedures

Participants completed a self-administered questionnaire during class time. The researchers explained the instructions for completing the survey and remained available to answer questions that arose during administration. Refreshments were provided for all participants. Participants in school A also received a movie gift certificate, whereas the administrators and teachers in school B received school supply money to compensate for their efforts in the study. The study received approval from the University’s institutional review board.

Measures

Demographic Features

Participants provided information about their age, grade, gender, ethnicity, and mother’s level of education.

Smoking Behaviors

Participants were asked about the number of times they had “smoked a few puffs of a cigarette” in their entire lives, with responses being made on a 5-point scale (ie, none, 1 time, 2–5 times, 6–10 times, or >10 times).

Chance Estimates of Personally Experiencing Smoking-Related Risks

Participants read 2 scenarios about smoking cigarettes in general (proxy for regular cigarettes) and then 2 scenarios about smoking light cigarettes. The scenarios were identical except for the specification of light cigarettes. The first scenario asked participants to imagine that they had just begun smoking cigarettes (ie, “Imagine that you just began smoking. You smoke ~2 or 3 [light] cigarettes each day. Sometimes you smoke alone, and sometimes you smoke with friends.”). After reading this scenario, participants estimated the chances that they would personally experience 5 smoking-related risks (Tables 1 and 2).

Next, participants were asked to imagine that they continued to smoke cigarettes for the rest of their lives (ie, “Now imagine that you continued to smoke ~2 or 3 [light] cigarettes each day for the rest of your life.”). After reading this scenario, participants estimated the chances that they would personally experience 7 smoking-related health risks (Tables 1 and 2).

Participants’ chance estimates were provided as any percentage between 0% and 100%. The quantitative response scale (0–100%) was chosen over scales that use lexical probability terms (such as “likely” and “probably”) to estimate risk because of the great variability in meaning ascribed to these terms by adolescents.^{23–25}

Estimates of Addiction

After reading the scenario concerning short-term cigarette use (as described above), participants estimated the chances (0–100% scale) that they would personally experience 3 addiction risks (Tables 1 and 2). Participants were also asked about the ease of cessation (ie, “If you smoke ~2 or 3 [light] cigarettes each day, how easy will it be for you to quit smoking?”), with responses being made on a 5-point scale ranging from “very easy” to “not at all easy.” Finally, participants reported on the length of time until

TABLE 1. Comparison of Adolescents' Estimates of Personal Risk and Benefit With Regular Versus Light Cigarettes: Mean-Level Analyses

	Risk Estimates, Mean (SD)		<i>t</i> Value
	Regular Cigarettes	Light Cigarettes	
Short-term cigarette use			
Risks			
Smell like an ashtray	79.81 (27.29)	79.04 (26.66)	0.822
Get a bad cough from smoking	71.93 (28.17)	69.97 (28.24)	1.56
Have trouble catching your breath	71.56 (28.59)	71.20 (27.85)	0.325
Have many really bad colds	58.09 (30.42)	60.07 (30.62)	1.52
Have bad breath	78.43 (29.61)	75.64 (29.74)	2.16*
Addiction			
Become addicted to cigarettes	69.07 (30.30)	66.98 (30.13)	1.32
Still be smoking in 5 y	57.32 (32.42)	59.76 (31.18)	1.45
Be able to quit smoking	45.82 (32.98)	50.19 (32.20)	2.53†
How long will it take to become addicted‡	2.98 (1.18)	3.17 (1.15)	3.73§
How easy will it be for you to quit smoking	3.64 (1.08)	3.41 (1.06)	4.59§
Long-term cigarette use			
Risks			
Get lung cancer	73.04 (25.22)	70.89 (27.03)	1.79¶
Die from lung cancer	68.80 (26.92)	68.35 (26.87)	0.356
Get a bad cough from smoking	75.52 (25.31)	74.06 (25.60)	1.45
Have trouble catching your breath	76.36 (24.16)	74.69 (26.62)	1.50
Have a heart attack	67.66 (25.51)	65.15 (26.35)	2.12*
Get wrinkles on your face	79.74 (24.13)	78.44 (25.50)	1.159
Die from a smoking-related disease	73.13 (25.36)	70.53 (26.89)	2.30*

* $P < .05$; † $P < .01$; § $P < .001$; ¶ $P < .10$.

‡ Response scale for this question: will not happen (1); ≤ 1 month (2); 1 to 6 months (3); 7 to 11 months (4); 1 to 2 years (5); 3 to 4 years (6); ≥ 5 years (7).

|| Response scale for this question: very easy (1); somewhat easy (2); a little easy (3); not very easy (4); not at all easy (5).

TABLE 2. Comparison of Adolescents' Estimates of Personal Risk and Benefit With Regular Versus Light Cigarettes: Individual-Level Analyses

	Percent of Participants Indicating		
	More Likely for Regular Cigarettes	No Difference	More Likely for Light Cigarettes
Short-term cigarette use			
Risks			
Smell like an ashtray	23.9	55.7	20.5
Get a bad cough from smoking	33.2	41.7	25.1
Have trouble catching your breath	27.7	44.6	27.7
Have many really bad colds	26.0	41.6	32.4
Have bad breath	31.9	48.7	19.4
Addiction			
Become addicted to cigarettes	34.4	37.4	28.2
Still be smoking in 5 y	31.8	34.1	34.1
Be able to quit smoking	23.7	38.5	37.8
How long will it take to become addicted	8.4	66.2	25.5
How easy will it be for you to quit smoking	31.1	60.6	8.3
Long-term cigarette use			
Risks			
Get lung cancer	29.8	46.6	23.7
Die from lung cancer	29.2	43.1	27.7
Get a bad cough from smoking	33.0	45.6	21.5
Have trouble catching your breath	29.9	46.4	23.8
Have a heart attack	36.6	40.1	23.3
Get wrinkles on your face	31.2	48.5	20.4
Die from a smoking-related disease	40.6	38.3	21.1

addiction (ie, "If you smoke ~2 or 3 [light] cigarettes each day, how long do you think it will take until you become addicted to [light] cigarettes?"), with responses being made on a 7-point scale ranging from "will not happen" to "5 or more years."

Attitudes and Knowledge About Light Cigarettes

Participants responded to 14 items concerning their attitudes and knowledge about light cigarettes versus regular cigarettes in 4 categories, ie, delivery (amount of tar and nicotine; 2 items), health risks (5 items), perceived social outcomes (5 items), and

addiction/cessation (2 items) (Table 3). Participants responded to each item on a 4-point scale, ranging from "strongly agree" to "strongly disagree." Participants also had the opportunity to indicate that they did not know how to answer each question.

RESULTS

Preliminary Analyses

Before conducting the main study analyses, we conducted analyses to determine whether percep-

TABLE 3. Comparison of Adolescents' Attitudes and Knowledge Regarding Regular and Light Cigarettes

Statement on Regular Versus Light Cigarettes	Mean (SD)*	Percent of Participants Indicating				
		Strongly Agree	Agree	Disagree	Strongly Disagree	Don't Know
Delivery						
Regular cigarettes deliver more tar	2.04 (0.77)	18.8	45.5	13.9	4.1	17.7
Light cigarettes deliver less nicotine	2.54 (0.87)	6.9	33.1	23.8	11.9	24.2
Health risks						
Regular cigarettes are more likely to cause a heart attack	2.60 (0.83)	6.9	28.4	33.3	10.7	20.7
Regular cigarettes are more likely to cause lung cancer	2.57 (0.87)	8.4	28.7	29.9	11.5	21.5
Regular cigarettes are more likely to cause a bad cough	2.66 (0.86)	5.7	29.7	28.9	14.1	21.7
Light cigarettes are more likely to cause trouble catching your breath	2.90 (0.78)	4.6	13.4	43.5	14.9	23.7
Regular cigarettes are less likely to cause wrinkles on the face	3.12 (0.83)	4.5	8.0	36.0	25.8	25.8
Perceived social benefits						
Smoking light cigarettes looks cooler	3.42 (0.74)	2.7	5.4	32.2	47.7	12.0
Smoking light cigarettes makes you thinner	3.04 (0.83)	4.2	8.8	33.5	20.0	33.5
Smoking regular cigarettes is more likely to make you smell like an ashtray	2.86 (0.89)	6.8	20.5	36.4	22.3	14.0
Smoking a regular cigarette makes you feel more relaxed	2.84 (0.88)	5.7	14.1	30.9	14.9	34.4
Smoking light cigarettes looks more grown-up	3.21 (0.81)	4.2	8.3	37.9	34.8	14.8
Cessation						
It is easier to quit smoking light cigarettes	2.71 (0.86)	6.4	25.3	33.2	15.1	20.0
Regular cigarettes are more addictive	2.69 (0.90)	6.9	28.7	28.0	17.2	19.2

* Response scale for this question: strongly agree (1), agree (2), disagree (3), strongly disagree (4). Participants could also indicate if they did not know.

tions of light versus regular cigarettes varied according to smoking experiences. We had only 84 participants who had ever tried a cigarette, even a puff, and 61 adolescents who reported having ever smoked a light cigarette. Furthermore, the number of times participants had tried a cigarette varied greatly, with 18 adolescents having tried a cigarette 1 time, 24 adolescents having tried a cigarette 2 to 5 times, 11 adolescents having tried a cigarette 6 to 10 times, and 31 adolescents having smoked >10 times. Therefore, the sample sizes with variations in smoking experiences were too small to allow a meaningful analysis according to smoking group. However, because perceptions of risk vary with the number of times an adolescent has smoked,²¹ we did examine the correlation between the number of times the adolescent had smoked and differences in perceptions of light versus regular cigarettes. None of these correlations was significant; therefore, data were combined across smoking experiences.

Perceptions of Smoking-Related Risks With Light Versus Regular Cigarettes

Paired *t* tests were used to examine our hypothesis that adolescents perceive less risk if they smoke light cigarettes, compared with regular cigarettes. Given the literature showing that adults perceive light cigarettes as less harmful and addictive than regular cigarettes and our directional hypothesis that adolescents would demonstrate similar if not greater bias, we used 1-tailed, directional *t* tests.

As indicated in Table 1, adolescents did not perceive a significant difference in the chances of experiencing 4 of the risks (ie, bad cough, trouble catching breath, bad colds, and smell like an ashtray) with short-term use of regular versus light cigarettes. Adolescents did think the risk of having bad breath was higher with regular versus light cigarettes ($P = .032$). Importantly, participants did think that they would

be significantly less likely to get lung cancer ($P = .075$), have a heart attack ($P = .036$), and die from a smoking-related disease ($P = .022$) when smoking light cigarettes versus regular cigarettes for the rest of their lives. No differences were found in chance estimates of dying from lung cancer, getting a bad cough, having trouble breathing, or getting wrinkles with the 2 cigarette types.

Perceived risk of becoming addicted and still smoking in 5 years did not differ significantly between regular and light cigarettes in the short-term tobacco use scenario. However, when participants were asked about their perceived ability to quit smoking the 2 cigarette types, they thought that their chance of being able to quit smoking was greater with light versus regular cigarettes ($P = .012$). Adolescents also thought it would take significantly longer to become addicted to light versus regular cigarettes ($P < .0001$) (Table 1). Similarly, when participants were asked how easy it would be to quit smoking the 2 cigarette types, they thought that it would be significantly easier for them to quit smoking light cigarettes than regular cigarettes ($P < .0001$) (Table 1).

Because many of the results were not significant, we conducted a power analysis to confirm that we had adequate power to detect differences in perceptions of light versus regular cigarettes. With an α of .05 for a 1-tailed *t* test, we found that, with a sample size of 267, we had adequate power of .74 to detect small effects.²⁶ Therefore, we do not think that the lack of significance was attributable to sample size.

It was also important to determine the actual percentage of participants who incorrectly thought that regular cigarettes are more harmful and addictive than light cigarettes. Therefore, each individual was assigned a score for each outcome, corresponding to whether they thought the outcome was more likely to occur with regular cigarettes (+1) or with light

cigarettes (-1) or was equally likely to occur with regular or light cigarettes (0). As shown in Table 2, while >40% of participants on average gave equal estimates of risk outcomes (bad cough, trouble catching breath, bad colds, and bad breath) for regular and light cigarettes, between 26% and 33% thought that these outcomes were more likely to occur when beginning to smoke regular cigarettes, compared with light cigarettes, and between 19% and 32% viewed these outcomes as more likely with light cigarettes.

A large proportion of the participants (between 29% and 41%) thought that they were more likely to experience a number of negative health outcomes (lung cancer, heart attack, death from a smoking-related disease, bad cough, trouble breathing, and getting wrinkles) if they smoked regular cigarettes, compared with light cigarettes, for the rest of their lives. Importantly, 40.6% thought that they were more likely to die of a smoking-related disease with regular cigarettes than with light cigarettes, whereas only 21.1% thought that the risk was higher for light cigarettes and 38.3% did not perceive a difference in risk between the 2 cigarette types. A large percentage of the participants thought that addiction was less likely with light cigarettes. For example, 34.4% thought that they were more likely to become addicted to regular cigarettes than to light cigarettes, and 37.8% thought that it would be easier for them to quit smoking light cigarettes than regular cigarettes (Table 2).

Attitudes and Knowledge About Light Cigarettes

Participants were asked how strongly they agreed or disagreed with a series of 14 statements comparing regular and light cigarettes in terms of the amounts of tar and nicotine delivered, health effects, social benefits, and addictive properties. Table 3 shows the average scale responses for each item, as well as the proportions of participants who strongly agreed, agreed, disagreed, and strongly disagreed with each statement. In terms of delivery, 64.3% of the adolescents agreed or strongly agreed that regular cigarettes deliver more tar than light cigarettes and 40.0% thought that light cigarettes deliver less nicotine than regular cigarettes. Adolescents had similar misperceptions about the health risks associated with light cigarettes, with a large proportion of participants agreeing or strongly agreeing that smoking regular cigarettes is more likely to cause lung cancer (37.1%), a heart attack (35.3%), and a bad cough (35.4%), compared with smoking light cigarettes; however, between 41% and 44% of the adolescents either disagreed or strongly disagreed with these statements. The majority of adolescents disagreed or strongly disagreed that they would look cooler (79.9%), become thinner (53.5%), or look more grown-up (72.7%) with light cigarettes, although almost 13% agreed or strongly agreed with these statements. A significant proportion of adolescents demonstrated misperceptions about the addictive properties and ease of cessation with light cigarettes, with 35.6% and 31.7% agreeing or strongly agreeing that regular cigarettes are more addictive than light

cigarettes and that light cigarettes are easier to quit than regular cigarettes, respectively. Between 45% and 48% of the adolescents disagreed or strongly disagreed with those statements. It should be noted that, on average, 22% of the participants stated that they did not know the answers to each of these knowledge questions.

DISCUSSION

Light cigarettes, although marketed as a healthy alternative to regular cigarettes and as an aid to quitting smoking, in fact do not reduce the health risks associated with smoking^{1,2} and do not increase rates of smoking cessation.^{3,4} Despite these facts, more than one-half of adolescent smokers in the United States smoke light cigarettes. The current study is the first to examine whether adolescents are aware of the true risks of smoking light cigarettes or whether their beliefs have been influenced by tobacco industry claims that light cigarettes are less harmful. Overall, the results of this study show that adolescents hold misperceptions in both their personal risk estimates and their general attitudes about the health risks, addictive properties, and ease of cessation associated with light cigarettes. These findings are similar to those outlined in studies with adult samples^{2,9-13} and expand on those results by assessing perceived risk for a number of short- and long-term smoking outcomes in an adolescent population.

On average, adolescents in this study thought that long-term use of light cigarettes was less likely to cause lung cancer, heart attacks, and death from a smoking-related disease than was use of regular cigarettes. Adolescents also thought it would take longer to become addicted to light cigarettes and it would be easier to quit smoking light cigarettes, compared with regular cigarettes. Given that 64.3% and 40.0% of adolescents incorrectly thought that regular cigarettes deliver more tar and nicotine, respectively, than light cigarettes, these misperceptions about the health and cessation properties of light cigarettes are not surprising. With a variety of light and ultralight cigarettes on the market to choose from, adolescents are led to think that there is a progression of safety levels from which to choose when deciding which cigarettes to smoke. This illusion of control over the health outcomes contributes to an underestimation of risks associated with smoking light cigarettes and supports these misperceptions.²⁷

Although some of the adolescents in this study were aware of the health risks and addictive properties associated with light cigarettes, the data clearly showed that 22% of the adolescents were uncertain regarding the differences between regular and light cigarettes and between 25% and 35% of the adolescents thought that health risks were more likely with regular cigarette use than with light cigarette use. These results are of concern, given evidence suggesting that, if adolescents think they are less vulnerable to smoking-related health risks (ie, lung cancer), then they are more likely to initiate smoking.¹⁴⁻²² Furthermore, there is evidence that adolescents are not fully

aware of the addictive nature of cigarettes and thus think that they can experiment with smoking during adolescence without becoming addicted or suffering any health consequences.^{22,27} The data presented here support concerns regarding smoking addiction; adolescents might be even more inclined to smoke light cigarettes to delay addiction.

Adolescents' misperceptions about the health and cessation properties of light cigarettes mirror marketing by the tobacco industry. In fact, it has been shown that adolescent' smoking intentions²⁸ and behavior²⁹ are heavily influenced by the multimedia smoking campaigns launched by the tobacco industry. This is supported in part by our results showing significant differences in risk perceptions for light versus regular cigarettes in smoking outcomes most countered by pro-tobacco campaigns marketing light cigarettes (eg, healthier or a first step to cessation), whereas adolescents perceived less difference in outcomes not focused on by tobacco media (eg, cough and wrinkles), although the effects of media exposure were not specifically evaluated in this study.

Health care practitioners' efforts to dispel adolescents' inaccurate beliefs about light cigarettes may be informed by the success of light cigarette counter-advertising, which has been shown to be effective in changing knowledge³⁰⁻³³ and intentions to quit smoking^{31,33} among adults. Interestingly, a limited number of studies suggest that messages that focus on dispelling myths about the sensation of light cigarettes ("feel milder," "feel smoother," or "less harsh") may be more effective than those providing factual information about tar and nicotine delivery, blocked vents, or health outcomes related to smoking light cigarettes among adults.^{32,33}

A number of study limitations need to be discussed. First, questions concerning personal risk estimates did not ask specifically about regular cigarettes but instead asked about cigarettes in general. These general cigarette questions were juxtaposed with questions specifically about light cigarettes and were therefore treated as a proxy for questions about regular cigarettes. However, if some adolescents interpreted "cigarettes" as other than regular cigarettes, then they would likely have been considering light cigarettes when answering these questions, which would result in an underestimation rather than overestimation of perceived risk differences. Second, the order of the questioning about regular and light cigarettes was not counterbalanced. The results were consistent with the adult literature on light cigarettes and with hypotheses that adolescents perceive light cigarettes as less harmful and addictive. Therefore, we do not think that participants' responses were influenced by the order of the questions, although we cannot be certain. Third, because of the small numbers of smokers and light cigarette smokers in this sample, we were unable to explore differences in attitudes and risk perceptions between smokers and nonsmokers or between light cigarette smokers and nonsmokers. Such analyses have yielded interesting results in studies of adults,¹¹ and similar exploration among adolescents is needed. Lastly, the cross-sectional nature of this analysis did

not allow investigation of potential links between risk perceptions, attitudes, and smoking initiation, cessation, or cigarette brand choices.

CONCLUSIONS

This study has demonstrated that adolescents harbor misperceptions about the health risks, addictive properties, and ease of cessation associated with light cigarettes. Such misperceptions have the potential to influence adolescents' intentions to initiate and quit smoking, thereby increasing the number of adolescent smokers in the United States. Without correct information about light cigarettes, adolescents are unable to make informed decisions about their smoking behaviors. The findings presented here strongly suggest that health care practitioners need to talk to their adolescent clients not only about the overall risks of smoking but also about the specific risks associated with smoking light cigarettes and other tobacco varieties, including the potential for addiction and long-term health consequences. Information shared with adolescents about light cigarettes, both individually by health care practitioners and at the population level via counter-advertising campaigns, may be successful in changing current misperceptions, and ultimately light cigarette smoking patterns, among youths.

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