

# Beliefs about “Light” and “Ultra Light” cigarettes and efforts to change those beliefs: an overview of early efforts and published research

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When used as a descriptor for foods, the term “light” has unambiguous meaning. The Food and Drug Administration (FDA) labelling regulations for foods require that foods labelled “light” must meet uniform criteria as defined by the FDA. Specifically, light foods must be either reduced in fat by at least 50% or reduced in calories by at least one third.<sup>1</sup> Consumers can therefore be assured that a food labelled “light” actually represents a generally healthier choice than the standard product. It would not be unreasonable, therefore, for consumers to assume that similar standards apply to the labelling of cigarettes. Unfortunately, this is not the case.<sup>2,3</sup> Cigarettes are not currently regulated by the FDA, and unlike foods, cigarettes labelled light do not necessarily represent a healthier choice for smokers.

Light and Ultra Light cigarettes were first introduced in the 1950s and '60s as a response to growing public awareness of the health risks of smoking. Following their introduction, these cigarettes were aggressively marketed to diminish smokers' health concerns and reassure smokers that they could smoke with less risk. Once confidential tobacco industry documents provide irrefutable evidence that these brands were specifically introduced to provide health concerned smokers with an alternative to quitting:

“All work in this area should be directed towards providing consumer reassurance about cigarettes and the smoking habit. This can be provided in different ways, e.g., by claiming low deliveries, by the perception of low deliveries, and by the perception of ‘mildness’.”<sup>4</sup>

“... ability to reassure smokers, to keep them in the franchise for as long as possible.”<sup>5</sup>

“Quitters may be discouraged from quitting, or at least kept in the market longer . . . A less irritating cigarette is one route (indeed, the practice

of switching to lower tar cigarettes and sometimes menthol in the quitting process tacitly recognizes this). The safe cigarette would have wide appeal, limited mainly by the social pressures to quit.”<sup>6</sup>

As advertising and promotional expenditures for Light and Ultra Light cigarettes increased over time, the market share for these brands increased as well (fig 1). Lights and Ultra Lights rose from a 3.6% market share in 1970 to 44.8% by 1980. Currently, these cigarettes account for 87% of the US market share.<sup>7</sup>

The notion that meaningful reductions in smoke exposure are achievable with Light and Ultra Light cigarettes—reductions that would ultimately translate into reduced health risk—has not been borne out in the scientific literature.<sup>8,9,10</sup> Light and Ultra Light cigarettes are specifically engineered to produce low yields of tar and nicotine when smoked by a machine according to a standardised protocol (that is, a 35 ml, two second puff taken approximately once a minute until a fixed butt length is reached). This protocol for measuring cigarette yields has become known as the “FTC method”.<sup>11</sup> Cigarette brands yielding approximately 7–15 mg tar by the Federal Trade Commission (FTC) method are generally designated “Light”, while those brands yielding 6 mg tar or less are generally designated “Ultra Light”. However, the parameters used by the FTC method do not accurately reflect the behaviour of actual smokers. Smokers routinely puff longer, harder, and more frequently to obtain their desired dose of nicotine.<sup>12,13,14</sup> Further, the machine measured yield of Light and Ultra Light cigarettes is greatly influenced by ventilating the cigarette filter to dilute the stream of inhaled smoke with air. Ventilation holes facilitate the taking of bigger puffs on moderately vented Light cigarettes and, on heavily vented Ultra Light cigarettes, foster behavioural blocking of vents with lips or fingers.<sup>15,16,17</sup> Therefore, as a result of human smoking behaviour, standardised tar and nicotine yields based on the FTC method considerably underestimate actual human exposure.<sup>3,9,18,19</sup>

The following is a brief summary of some of the initial attitudinal research on Light and Ultra Light cigarettes. Specifically, the focus of this summary relates to smokers' beliefs about these cigarettes and some of the earliest counter marketing efforts undertaken to correct smokers' misperceptions about Light and Ultra Light cigarettes.

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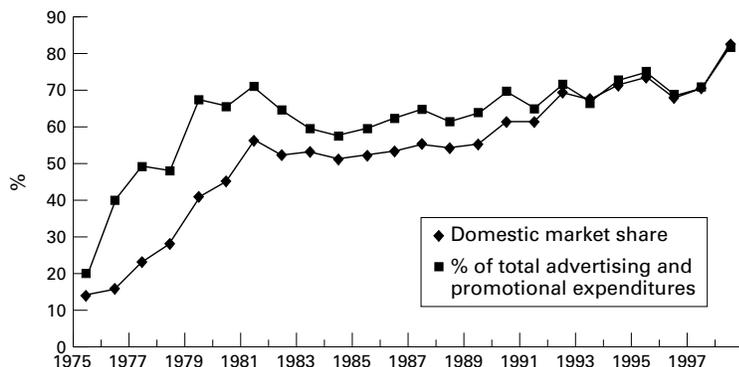


Figure 1 US market share and percentage of total advertising and promotional expenditures for cigarettes yielding 15 mg tar or less, 1975 to 1998. Source: Data from the Federal Trade Commission.<sup>7</sup>

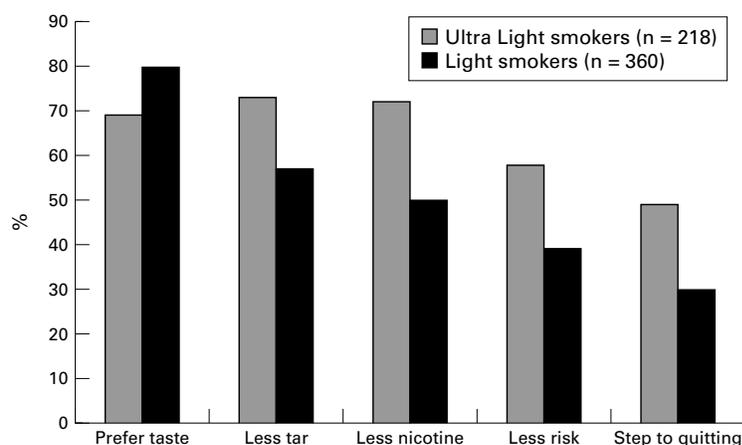


Figure 2 Percentage of smokers who reported the reasons shown for smoking Light and Ultra Light cigarettes. Source: Kozłowski et al.<sup>21</sup>

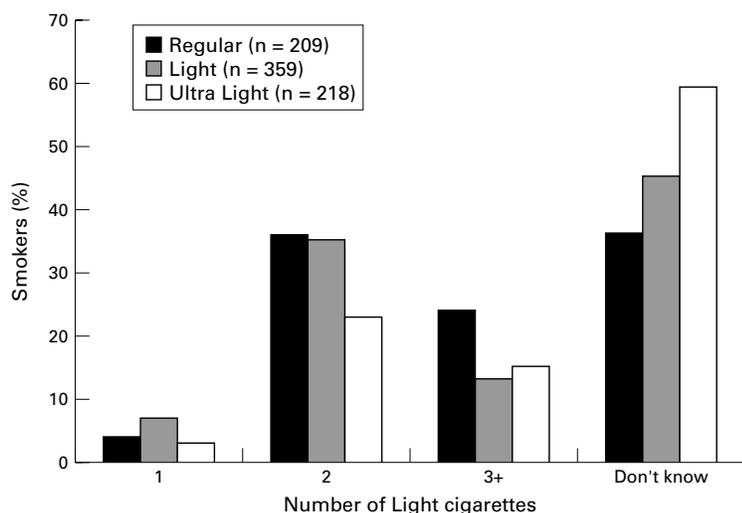


Figure 3 Smokers' responses to the question "How many Light cigarettes would someone have to smoke to get the same amount of tar as from one Regular cigarette?" (n = 786). Source: Kozłowski et al.<sup>21</sup>

### Mistaken beliefs about Light and Ultra Light cigarettes

Although the documented discordance between machine measured tar and nicotine yields and actual human exposure is well known within the scientific community, it became clear that this was not appreciated nor understood by smokers themselves. One of the first studies to address smokers' knowledge and understanding of advertised tar numbers for Light and Ultra Light cigarettes was done by Cohen.<sup>20</sup> A telephone survey was conducted with a national probability sample of 1005 adult smokers in the USA. The sample was asked to assume that a smoker switched from a 10 mg tar cigarette to a 1 mg tar cigarette, and then to choose one of the following three statements that best described their opinion: (1) the smoker probably could smoke more than one, but these numbers can't tell you how much less tar the person would take in from the 1 mg tar cigarette; (2) the smoker could smoke more than one or two, but less than nine or 10 of the 1 mg tar cigarettes without taking in more tar; (3) the person could smoke about 10 of the 1 mg tar cigarettes without taking in more tar. In total, approximately 25% of the sample

selected the third statement, suggesting that a substantial percentage of smokers do not understand the distinction between cigarette tar yield and tar intake. Tar *yield* is often not a good indicator of tar *intake by the smoker* in part because how a cigarette is smoked determines intake.

Kozłowski and colleagues<sup>21</sup> conducted a national telephone survey with 788 self reported daily cigarette smokers living in the continental USA (n = 210 Regular smokers, n = 360 Light smokers, and n = 218 Ultra Light smokers). The survey was intended to examine smokers' reasons for smoking Light and Ultra Light brands, to explore smokers' knowledge regarding compensatory smoking, and to assess whether mistaken beliefs about these brands were reducing intentions to quit smoking.

To determine smokers' reasons for smoking Light and Ultra Light cigarettes, respondents were read several statements and asked to indicate whether each statement applied to them. Respondents were specifically asked: "Do you smoke [Light or Ultra Light] cigarettes as a step toward quitting smoking completely"; "...to reduce the risks of smoking without having to give up smoking"; "...to reduce the tar you get from smoking"; "...to reduce the nicotine you get from smoking"; "...because you prefer the taste compared to Regular cigarettes?"

Figure 2 shows the percentage of respondents who responded affirmatively to each reason. The majority of respondents (69% of Ultra Light smokers, 80% of Light smokers) indicated that they smoked Light or Ultra Light cigarettes because they simply preferred the taste compared to Regular cigarettes. However, the other reasons received widespread support as well. A very large percentage of smokers reported smoking these cigarettes for lower tar, lower nicotine, to reduce the risks of smoking without having to quit, and as a step toward quitting smoking completely. These results suggest that mistaken beliefs about the health risks of Lights and Ultra Lights are influencing smokers' decisions to smoke these cigarettes.

To explore knowledge and understanding of compensatory smoking, respondents were asked: "How many Light cigarettes would someone have to smoke to get the same amount of tar as from one Regular cigarette?" Although it is possible to obtain less tar from a Light cigarette provided that compensation does not occur, the most accurate answer is "one". However, 90% of the sample either reported that they "did not know" or responded incorrectly (fig 3). The most frequently given response was "I don't know" (59% Ultra Light, 45% Light, 36% Regular), followed by a response of "two" (23% Ultra Light, 35% Light, 36% Regular). The overwhelming failure to answer this question correctly most likely reflects smokers' mistaken beliefs regarding the distinction between machine based *yields* of tar and actual tar *intake*.<sup>2 20</sup>

Respondents were also asked the following two questions: “If you learned that Light or Ultra Light cigarettes gave you the same amount of tar and nicotine as a Regular cigarette, would that make you more likely to stop smoking?”; and “If you learned that Light or Ultra Light cigarettes gave you the same amount of tar and nicotine as a Regular cigarette, would that make you more likely to switch to a Regular cigarette?” One out of three Ultra Light smokers and one out of four Light smokers reported that they would be at least somewhat likely to quit smoking if they learned that one Ultra Light or Light, respectively, is equivalent to one Regular cigarette. Notably, only a small percentage of Ultra Light (9%) and Light (12%) smokers indicated that they would be at least somewhat more likely to switch to Regular cigarettes upon learning this information.

The results of this study clearly show that smokers have unrealistic expectations regarding the risk reduction that can be achieved by smoking Light and Ultra Light cigarettes. This study also highlights the importance of providing smokers with factual information about Light and Ultra Light cigarettes in an effort to counter misperceptions and promote quitting.

#### Early work on counter-marketing Light and Ultra Light cigarettes

In 1982, a pamphlet entitled “Tar and nicotine ratings may be hazardous to your health: Information for smokers who are not ready to stop”, was published by the Addiction Research Foundation in Toronto, Canada.<sup>22</sup> This pamphlet was intended to inform smokers of how cigarettes were tested for tar and nicotine yields and of the basic principles of compensatory smoking (that is, more puffs, bigger puffs, filter vent blocking). It was hoped that this pamphlet would provide information to counter misperceptions and encourage smoking cessation. In 1986, the publication was translated into Swedish and published by the Swedish government. The English translation of the title, according to Karl-Olov Fagerström, is “Are you cheated by the label?”. The Harvard Medical School Health Letter reprinted the pamphlet in the early 1980s.<sup>23</sup> In 1993, the pamphlet was revised and republished with both the Addiction Research Foundation and Penn State University logos (after the author, Lynn Kozlowski, moved to Penn State),<sup>24</sup> and the title was changed to “Low-tar cigarettes are hazardous to your health—advice for smokers.”

In 1995, Marvin Goldberg, Martin Fishbein, and Susan Middlestadt organised an influential conference in Atlanta, Georgia, USA entitled “The role of advertising in social marketing”.<sup>25</sup> At this conference, Kozlowski and Sweeney<sup>26</sup> presented a paper on the need to inform consumers about how they were being misled about Light and Ultra Light cigarettes. It was argued that consumers of these cigarettes need to be informed of the risks of using these products and that “the impressions created by advertising and marketing safer

cigarettes need to be met with systematic countermarketing”.<sup>26</sup>

#### Evaluating the effects of Massachusetts’ television campaign to counter-market light cigarettes

At the Atlanta conference in 1995 videotapes of 30 second, television ads developed by Greg Connolly at the Massachusetts Department of Public Health were shown. Greg Connolly, a groundbreaker in this area, is one of the first researchers who did Light cigarette counter-marketing ads on television. These ads started running on television in 1994. One ad showed a cartoon skeleton who says the following:

“I got to get me a new agent. I mean, I’ve been on almost everything that can hurt you, right? Huh? So how come I’m not on ‘Light’ cigarettes? These are killing smokers left and right, because people are puffing on them harder—don’t even know they’re doing it. So they’re sucking in more tar and nicotine than the tobacco industry said they are. Man, ‘Light’ cigarettes are deadly. And I should be right on the pack, telling it like it is. Hey, has this face ever lied to you?”

The other ad shows a man holding the hose of a canister vacuum cleaner:

“Hear how some tobacco companies fool you with ‘Light’ cigarettes? They use vents, like these. [He moves a metal ring of the hose that opens a vent hole.] They put them in the filters to let in air. In lab tests, this gives them lower tar and nicotine numbers. But tar is what gives cigarettes their flavor, so the cigarette makers place the vents where the smoker’s fingers cover them up. When the tar levels rise, your taste buds get more flavor, and your lungs get more of everything else.”

To test the effects of this ad campaign, a random digit dialing survey was done with about 500 smokers and recent quitters nationwide and 500 smokers and recent quitters in Massachusetts.<sup>27</sup> In the national sample, 32% said they thought that Lights decrease risks, compared to only 18% in Massachusetts. Those in Massachusetts who reported seeing at least one of the anti-Light ads were less likely than those who reported seeing none of the ads to say that Lights decreased risks of health problems (12% *v* 28%,  $p < 0.05$ ). There was a consistent pattern indicating that message viewers in Massachusetts were more likely to know about filter vents and the risks of Light cigarettes. Interestingly, Massachusetts had a higher percentage of recent quitters than did the rest of the national sample (10% *v* 7%,  $p < 0.05$ ). The pattern of effects was consistent with the view that exposure to the ads was promoting smoking cessation.

#### Exploring the effects of a radio message counter-marketing Light and Ultra Light cigarettes

As a continuation of their earlier research,<sup>21</sup> Kozlowski and colleagues conducted a national, random digit dialling survey with 568 Light cigarette smokers to test smokers’ reactions to a 60 second radio message with factual information about the risks of Light cigarettes (for details see Kozlowski *et al*<sup>28</sup>). In

Table 1 Responses to the message on Light cigarettes ( $n = 401$ ; includes Regular, Light, and Ultra Light smokers)

Question	Not at all (%)	Only a little (%)	Somewhat (%)	Very much (%)	Don't know (%)
Does the message make you think more about quitting smoking?	43%	15%	22%	18%	0.5%
Does the message increase how much you want to give up smoking?	52%	18%	16%	12%	0.5%
Does the message make you think Lights are more dangerous?	43%	10%	16%	26%	3%

Source: Kozlowski *et al*<sup>28</sup>

the course of a telephone interview, the following message was played and respondents were asked for their opinions of the message.

"I thought 'Light' cigarettes were light, the way their name said. They felt smoother and I hoped they'd be a little better for me than 'Regular' cigarettes. But my doctor said I was wrong.

"University researchers measured what actually gets inside smokers and found that one 'Light' cigarette can give smokers just as much tar and nicotine as one 'Regular'. One 'Light' equals one 'Regular'.

"My doctor said, "Without really thinking, smokers puff more or get their fingers or lips in the way of tiny vent holes on the filters."

"I looked for the vents; and on some brands, I couldn't even see them. I said, "But 'Lights' feel easier on my chest."

"And my doctor explained that, yes, that could happen; but for my health, it was a difference that didn't matter. Kind of like jumping off a 15-story building instead of a 20-story building, the difference just doesn't matter.

"I was fooled by a Light name and a smooth taste. I was kidding myself with Lights.

I'm thinking about quitting smoking. You should, too."

Focus group testing and the prior national survey work<sup>21</sup> helped inform the development of this message. It was clear from both the national survey and the focus groups that Lights *feel* lighter to smokers and that an anti-Light message was not credible unless it acknowledged the perception of a lighter taste. Lights do taste lighter and feel easier on the chest. This effect seems to be another air dilution effect. Filter ventilation does help make Lights feel lighter.<sup>17</sup>

In designing the message, "One Light equals one Regular" was chosen as a simple, straightforward, concrete compensatory smoking message. A brief lesson about invisible vent holes was also incorporated into the message. We included a lesson on dose response (jumping off a 15 versus a 20 story building), and pretesting showed that it was important to explicitly encourage people to quit. The testimonial format of the message also diminished the perception that the message was "lecturing" to smokers; rather, the smoker was sharing new information with other smokers.

Table 1 shows respondents' immediate reactions to the message. The pattern indicates that the message did provoke increased thinking about the risks of Lights and the need to quit smoking. While some smokers were not moved very much by this one message, about 50%, if not a majority, showed some interesting responses.

The results were analysed in a structural equation model that used the elements of the Theory of Planned Behavior.<sup>29</sup> If Lights are diminishing the motivation to quit, taking away that myth should increase the desire to quit. The message did have a significant effect, as would be predicted, on increasing the desire to quit. The message appeared to increase desire to quit, which in turn increased intention to quit (see Kozlowski *et al*<sup>28</sup> for details).

Assuming that an influential message would be remembered over a long period of time, a follow up study was done 6–8 months later and attempted to recontact the participants in the original study (approximately 50% were contacted).<sup>30</sup> This was an adventuresome study, in part because, from a marketing point of view, if a message is played to someone twice over the phone, you should be grateful that—6–8 months later—anyone even remembers that they were interviewed, let alone remembers the content of the message. The final sample included 181 in the message group and 85 in the control group (that is, those who didn't hear the radio message). The results indicated that there were clear residual message effects. In comparison to the control group, those who heard the message: were less likely to think that "One 'Light' equals one 'Regular'" (51% *v* 74%,  $p < 0.05$ ); were less likely to report that Lights decreased tar intake (33% *v* 52%,  $p < 0.05$ ); and were less likely to think that Lights decreased health problems (18% *v* 31%,  $p < 0.05$ ). While there was an effect on the message groups' expressed desire to quit and a marginal effect on their intent to quit in five years, there was no effect on their expressed intent to try quitting in the next six months. The sample was relatively small and lacked the statistical power to show the likely small effects on smoking cessation. Also, a brief message played twice over the phone is certainly not the equivalent of an extensive, well designed media campaign over many months or years. These smokers of Light cigarettes, however, found it useful to know that they were being fooled by Light cigarettes.

#### Final points on counter-marketing

If one considers that a smoker is resting on a many legged stool, kicking out one leg of the stool may cause the smoker to tumble to the ground—or it may, on its own, have little effect. It depends on how many factors (legs) are supporting the smoker. In one kicks out the support that "Lights aren't really light", then one of the other reasons such as "I can't really quit" may still remain. The results to date are very promising, and there are additional results of more extensive testing on new kinds of ads.<sup>31,32</sup> We think it is important to counter-market Light cigarettes. It is especially important because the government has been doing so little to regulate the health claims attached to cigarettes or the descriptors (Ultra Light, Light, Mild) that can be part of cigarette names.

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