A critical role for tobacco control research is to develop and share information that can facilitate and expedite future research. A recent monograph, *A guide to deciphering the internal codes used by the tobacco industry*, available on the Harvard School of Public Health Web site (http://www.hsph.harvard.edu/php/prt/prt/home.html), identifies and describes a number of industry code lists and highlights different types of industry codes, both formal and informal, ranging from acronyms to "catchy" names, from numerical coding and letter patterning to signs of the zodiac and the names of world rivers. This monograph is part of a larger research project funded through a grant from the National Cancer Institute to list and define codes and project names used internally by the industry in areas related to product research, including product development, testing, and design. The ongoing list is housed online at the Tobacco Control Reference Dictionary website (http://tobaccocontrol.bmj.com). We encourage other document researchers to expand this list by posting codes and definitions that they have encountered. The public health community has benefited in extraordinary ways through the availability of the documents to all; now we need to work together to identify and expose the secrets hidden within these documents.

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REFERENCE


Table 1  Perceptions of truth telling by tobacco companies in 2004

<table>
<thead>
<tr>
<th></th>
<th>Total (n = 2997)</th>
<th>Smokers* (n = 638)</th>
<th>Former smokers† (n = 833)</th>
<th>Never smokers (n = 1524)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never tell the truth</td>
<td>26.7</td>
<td>32.0</td>
<td>28.7</td>
<td>23.4</td>
</tr>
<tr>
<td>Mostly do not tell</td>
<td>52.3</td>
<td>39.3</td>
<td>56.5</td>
<td>55.5</td>
</tr>
<tr>
<td>Mostly tell the truth</td>
<td>15.5</td>
<td>21.5</td>
<td>10.7</td>
<td>15.6</td>
</tr>
<tr>
<td>Always tell the truth</td>
<td>0.8</td>
<td>1.8</td>
<td>0.4</td>
<td>0.7</td>
</tr>
<tr>
<td>Don’t know/can’t say/refused</td>
<td>4.6</td>
<td>5.5</td>
<td>3.6</td>
<td>4.7</td>
</tr>
</tbody>
</table>

Data weighted by age and sex according to Australian Bureau of Statistics population Census data for 2001.

*Smokers include those who smoke daily, weekly or less than weekly.
† Former smokers include those who had smoked at least 100 cigarettes or an equivalent amount of tobacco in their lifetime.
Selling or promotion? In Australia, the Tobacco Advertising Prohibition Act (1992) bans most forms of tobacco advertising and promotion. In response to restrictions, the tobacco industry has resorted to “below the line” activities such as event promotions at music festivals, fashion parades, private parties, universities, bars, and nightclubs. At these events, tobacco products are promoted under the guise of “selling”. It is important to expose these promotional activities as they may constitute breaches of the Act. An audit of nine heavily advertised large youth music events in Perth found that the tobacco industry was actively promoting tobacco products at these events. At the single indoor event, cigarettes were sold via a vending machine and there were no promotional activities. At the eight outdoor events, cigarettes were sold in tents set up as “chill-out” areas in which chairs were provided for people to relax. The tents were staffed by young women selling tobacco products, ancillary products, and merchandise (for example, beer holders bearing the Rizla cigarette paper logo). At two events “cigarette girls”, dressed in Peter Stuyvesant brand colours, walked around the venues with trays of cigarettes for sale. Approximately half of the events were not restricted to those aged 18 years and over, thus exposing patrons aged under 18 years to the promotional activities of the tobacco companies. Not only do youth music events provide direct access to a primary target market for tobacco companies, but they also allow the marketers to build brand images by associating their brands with youth popular culture. Smoking becomes linked with the enjoyable experience of the music and fun atmosphere of the events, thus reinforcing the behaviour of current smokers and building more positive attitudes towards smoking among experimenters and non-smokers. The state government of Western Australia recently introduced legislation which, if enacted, will assist in controlling the promotion of tobacco products at events. Specifically, the proposed Tobacco Products Control Bill 2005 will ban the mobile selling of tobacco products (currently not considered to be promotion, and permitted as “selling”). It also contains provisions to prohibit the sale or supply of tobacco products via temporary premises at events that are expected to attract significant numbers of people aged under 18 years. This proposed new legislation will further restrict the marketing opportunities of tobacco companies.

Response to E Yano and S Chapman

Professor Eiji Yano raises a number of issues in his letter1 which responded to my commentary2 on his article3 about the Japanese spousal study, as does Chapman in his editorial.1 Here I reply to the main points raised. Studies of environmental tobacco smoke (ETS) exposure and lung cancer commonly identify a group of self reported non-smoking women and then compare risk according to the smoking habits of the husband. If some true smokers are erroneousy included among the female subjects, an apparent relationship of spousal smoking with lung cancer is identified, even when no true effect of ETS exists. This has been mathematically demonstrated (for example, Lee and Forey4), with attempts to correct for it made by major independent authoritative reviews of the evidence on passive smoking and lung cancer.5 The magnitude of the bias depends (among other things) on the extent to which women who smoke are misclassified as non-smokers. It can also be shown mathematically6 that a given rate of misclassification of smokers as non-smokers is a much more important cause of bias than is the same rate of the reverse misclassification, of non-smokers as smokers. Since such reverse misclassification is also implausible, adult women having little reason to claim erroneously to be smokers, the major reviews7–9 have all ignored its minor effects.

Given that in the Japanese spousal study (using a urinary cotinine/creatinine ratio (CCR) above 100 ng/mg as an index of true smoking) the reverse misclassification rate (8/298 = 2.7%) was much lower than the misclassification rate itself (5/298 = 1.7%), it becomes abundantly clear that reverse misclassification is not relevant to the passive smoking/lung cancer issue. It is difficult to understand why Yano places such emphasis on it. Yano’s states that I am “confused with the calculation formula” and that my “definition of misclassification was obtained by dividing those with > 100 ng/mg CCR (n = 28) by self reported non-smokers (n = 318)”. It appears that Yano himself is confused. I had previously made it clear10 that the denominator should not be 318, but 98, the number of women with a CCR value indicative of smoking (or perhaps 106, if it also includes those women who claimed to smoke but had a CCR < 100 ng/ml).

The misclassification rate calculation is clearly based on CCR > 100 ng/ml validly indicating smoking. Such an index “is widely used,” though may be subject to some error, and was the best technique available at the time. Most smokers admit to smoking, so that self report has some validity as an indicator of true smoking status, but this does not help us estimate the magnitude of the misclassification bias. The observed lack of correlation in the Japanese spousal study between CCR in non-smokers (with CCR < 100 ng/ml) and other indices of ETS exposure suggests that inaccuracy in CCR measurement at low levels may be important. However, such inaccuracy may not be relevant to the misclassification rate calculation, which merely attempts to use CCR to distinguish smokers from non-smokers. Over half the self reported non-smokers with values over 100 ng/ml actually had values of 1000 ng/mg, and it would be very surprising indeed if errors in CCR measurement were so huge that these women were really non-smokers. Though I would be happy to see results of further studies using up to date, state of the art chemical methods to detect nicotine metabolites in self reported non-smokers, the conclusion I reached in 1995 that misclassification rates are much higher in Japanese than in
Western populations seems to be correct. I note that the existence of high misclassification rates in Asian women has in fact been independently confirmed.3

Yano states3 that I used his data without his consent. As far as I am aware, the data never belonged to Yano. The study had been funded by the industry which had carried out the cotinine analyses (blind of self reported smoking status). It had originally promised that the study be done, following conduct of a similar study in England, which the industry supported at my request, the results of which I reported.1 The original intention had been for Yano to be a major author, but problems arose because his interpretation of the findings differed materially from mine, due to his misunderstanding of the complexities of misclassification. Discussions took place between Yano and Proctor, who played an important role in the planning and organisation of the study on behalf of the tobacco companies who funded it; I was told that these discussions led to Yano deciding not to continue and to his misunderstanding that the work would be published by others.

I had assumed that Proctor would keep Yano informed about the status of the publication and was surprised Yano did not find out about the paper, published in 1995, until some seven or eight years later. Clearly, one of us should have kept him informed, and for this I apologise. In his original article, Yano states that “at no stage in my interactions with Proctor was Lee’s name or role ever mentioned”. This is surprising inasmuch as the study proposal stated that I would assist in reviewing the study design and in interpreting the data. Was Yano really unaware of the previous literature on misclassification of smoking, in which I figured prominently (see Lee) when conducting a study, a major aim of which concerned the determination of misclassification rates? Chapman1 considers that “it is hard to imagine a more flagrant example of attempted ghost authorship”. It is difficult to see why Chapman sees the publication as ghost authorship at all, when I proposed the study, helped in its design and published it. The study was a joint enterprise, as I saw it, and it is perfectly normal for some of the scientists involved in a study to write a draft for others to agree to. It would clearly have been better had a version been written by all, with Yano as the author list, been published. However, Yano’s failure to understand the mathematics of misclassification made this impossible. There was no agreement I am aware of that Yano had sole rights to authorship. Had I not published the paper it seems that the findings would never have appeared in the public domain at all. Did Yano also have sole rights to suppress the findings?

At the end of the day it is interesting that, though the evidence of high misclassification rates in Japanese women has been independently confirmed,4 the relevance of this to the ETS/lung cancer relationship has been ignored in recent major reviews of ETS and lung cancer (for example, Hackshaw et al5, International Agency for Research on Cancer6). I have demonstrated the major biasing effect of this finding in detail elsewhere.1

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Competing interests: Peter Lee is a long term consultant to the tobacco industry.

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Should a paper with erroneous interpretations based on invalid measurements be published?

In response to Mr Lee’s comment which follows previous responses and my paper,1 I offer further details to resolve an apparent misunderstanding of the validity and reliability of cotinine/creatinine ratio (CCR) measurement and his mishandling of the formula of misclassification. I also express concerns about the validity of his scientific integrity in his reporting1 of the Japanese spousal study, including his authorship.

As I demonstrated,1 all indices of nicotine exposure (ambient room, personal sampler monitors, and self reported) were well correlated but correlated poorly with CCR, raising doubts about the validity of the CCR measurement. Yet Lee maintains that CCR measurement in this study was the gold standard for distinguishing true smokers from falsely reporting smokers.

There are several possibilities about why the CCR measurement may have been invalid and unreliable in this study. In 1991 when I sent the urine samples to the RJ Reynolds laboratory (where the measurement was performed), I was informed that the urine sent with the sample had sublimated before it reached the laboratory. This suggests that the sample was not maintained at a low temperature before analysis. Cotinine measurement is temperature sensitive. If the sample was exposed to high temperature before the analysis can make the measurement inaccurate.

As I calculated,4 the misclassification and reverse classification were equal weight in suggesting inappropriateness of the CCR measurements as the gold standard. Lee’s neglect of reverse misclassification thus allows him to claim an inflated false negative rate of smoking. Lee continues to justify his misclassification formula by referring to his previous use of the formula. However, this formula is dependent on the prevalence of smoking among the study population and assumes artificial inflates the misclassification rate of populations with low smoking prevalence. By way of illustration, consider two hypothetical populations of 1000 people each with smoking rates of 10% (A) and 30% (B). Suppose that, due to the inaccurate CCR measurement, just 3% of true smokers are classified as non-smokers by erroneously low CCR and 3% of true non-smokers are classified as smokers by erroneously high CCR (for the sake of simplification, I assume no false reports by the subjects). We will get the results shown in table 1.

As can be seen, Lee’s formula for misclassification is dependent on the prevalence of smoking. With only a slight (3%) inaccuracy in CCR measurement, he can thereby get even more than three times higher (21% v 6%) misclassification 1 in a population with lower smoking prevalence, such as with Asian women.

After a long discussion between Proctor and me, Proctor finally understood and accepted my point on the misclassification formula. Our final draft of the misclassification formula which Proctor sent to me on 9 November 1992 with my name as a sole author, clearly mentioned the high proportion of misclassification in both sides (self reported non-smoking subject with high CCR and self reported smokers with low CCR).

Lee insists that reverse misclassification is relatively unimportant in his “abundant” mathematical publications. However, I note that I seems to have realized the importance of using 28/106 as the misclassification rate of self reported smokers in his original study, having quietly switched to 28/98 for this rate after I pointed out his confusion. Despite his claim that reverse misclassification is implausible, it was observed as a fact.

Lee states that as far as he is aware “the data never belonged to Yano”. He should be aware that I developed the questionnaire, and that the study is not simply the result of the IQI surveys he supervised the survey at the study area (Shizuoka), erroneously referred to in Lee’s paper as “Shizoka”1. I planned and ordered the data input, performed the data analysis, and wrote the paper. I also pointed out the experience of possible sample damage (from dry ice sublimation) by the commercial

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www.tobaccocontrol.com

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on health but also on communities, economies, and the environment. Esson and Leeder give a very brief introduction to the impact of tobacco on health and then seek to establish a prima facie link between tobacco and poverty in each of the eight MDGs. The book summarises some of the economic arguments that often rates highly with governments: “Tobacco has a negative impact on the balance of payments of many countries. Two-thirds of 161 countries, where data are available, are net importers of tobacco, losing more hard currency in cigarette imports than they gain in exporting tobacco.” After giving an overview of the relationship between tobacco use and the MDGs the book divides issues into six sections: the WHO Commission on Macroeconomics and Health (CMH) and the WHO Framework Convention on Tobacco Control; up to date information on consumption in developing countries. Two sections cover the links between tobacco and poverty at the national and individual levels covering the first seven of the MDGs. A section addresses the need for global partnerships in development and researching, particularly in funding mechanisms, for achieving the MDGs, and another summarises ways in which the current goals can be enhanced by a stronger tobacco control related to the particular goals or targets.

Developing countries

The book points out that focusing on tobacco use in developing countries has often seemed a distraction. The data from developing countries is often poor, agencies often see water and sanitation as more critical than tobacco, the economic and health costs are seen as an issue in high income countries rather than those with limited health and economic impact data, and the developing countries often see the current tobacco trade as an economic benefit. The authors, Katherine Esson and Stephen Leeder, have brought together a compendium of useful research and information in a way that can have greater impact with policymakers and governments. This includes a review of the trends in global numbers of smokers, the transition of health impacts from tobacco to developing countries, and the role of trade liberalisation. The book lists the data on the negative economic arguments that often rates highly with policymakers to ensure inclusion of tobacco control goals in country policy and strategy reviews. The issues must be placed on the agenda of planning agencies, decision makers, and politicians. A summary of the key issues from this report was usefully included in the August 2005 publication by WHO of Health and the Millennium Development Goals. In July 2004 the United Nations Economic and Social Council (ECOSOC) passed a resolution indicating how pivotal this issue is by stating, “…tobacco control has to be recognized as a key component of efforts to reduce poverty, improve development and progress towards the Millennium Development Goals.” Tobacco control needs to be included in the programmes of countries aiming to achieve the MDGs. Tobacco control also needs to be a key component of development assistance programmes in general.” Without this inclusion, it’s unlikely that the majority of developing countries will achieve their desired MDGs.

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Table 1
Hypothetical populations with 3% inaccurate CCR measurement

<table>
<thead>
<tr>
<th>A: if 10% smoke</th>
<th>CCR (ng/mg)</th>
<th>Smoker</th>
<th>Non-smoker</th>
<th>Total</th>
<th>Lee’s misclassification formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>High (&lt;100)</td>
<td>97</td>
<td>27</td>
<td>124</td>
<td></td>
<td>27/124 = 0.21 (21%)</td>
</tr>
<tr>
<td>Low (≥100)</td>
<td>3</td>
<td>873</td>
<td>876</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>900</td>
<td>1000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B: if 30% smoke</th>
<th>CCR (ng/mg)</th>
<th>Smoker</th>
<th>Non-smoker</th>
<th>Total</th>
<th>Lee’s misclassification formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>High (&lt;100)</td>
<td>291</td>
<td>21</td>
<td>312</td>
<td></td>
<td>21/312 = 0.06 (6%)</td>
</tr>
<tr>
<td>Low (≥100)</td>
<td>9</td>
<td>679</td>
<td>796</td>
<td>1000</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>300</td>
<td>700</td>
<td>1000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CCR, cotinine/creatinine

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BOOK REVIEW

The millennium development goals and tobacco control: an opportunity for global partnership

Written by Katherine M Esson, Stephen R Leeder. Published by World Health Organization, 2005. ISBN 92 4 159287 7

MDGs and tobacco: a glimmer of hope—but only if matched by dollars

Many agencies and organisations have great expectations for the poverty reduction targets of the millennium development goals (MDGs). These were adopted at the Millennium Summit of the United Nations in New York in September 2000 with the aim to “ensure that globalization becomes a positive force for all the world’s people”. The eight goals of the MDGs are specifically targeting issues regarded as critical to progress in reducing poverty including eradicating poverty, achieving universal education, promoting gender equality, reducing child mortality, improving maternal health, combating HIV/AIDS, malaria and other diseases, and ensuring environmental sustainability. As conceived, the MDGs had a strong focus on poverty reduction, but the aim to improve health outcomes for marginalised millions was virtually silent on tobacco control.

The recent publication of The millennium development goals and tobacco control: an opportunity for global partnership is a welcome contribution to fill many of the initial gaps in the MDG goals impacted by global tobacco use. Since 2000, the World Health Organization and other UN agencies have done considerable work on the adverse role that tobacco use has not
A guide to deciphering the internal codes used by the tobacco industry

D Cullen, G F Wayne, G Connolly and H Koh

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